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The Post Office Tercentenary

THE close link between the Post Office and British railways is sufficiently well-known to require no emphasis to justify our saying that railways have a special reason for joining in the general congratulations to the Postmaster-General on having celebrated, last Wednesday, the three hundredth anniversary of his department's existence. Under Queen Elizabeth the official postal service was expressly limited to Her Majesty's affairs, and it was not until Charles I appointed Thomas Witherings by proclamation dated July 31, 1635, to a position corresponding to that of Postmaster-General that the Post Office of the present day had its beginnings. Transport is particularly grateful to this department for the steps it took in early years to secure regularity, safety, and rapidity of travel services. As we pointed out in an editorial article on September 7 last, the question arose almost immediately on the establishment of steam railways as to whether the new means of rapid transport could be used advantageously for the conveyance of mails. Arrangements were quickly made, and the first rail-borne mail was carried between Liverpool and Manchester on November 11, 1830. With the gradual spread of the systems, the railways rapidly assumed the position of providing the chief means of transport for mails, and recent figures show that out of roughly 6,000,000,000 letters handled by the Post Office annually, the railways carried 80 per cent., amounting to 25,000,000 bags. In order that the postal business may not be suddenly upset by timetable operations affecting trains on which considerable quantities of mails are carried (mostly trains to which travelling post offices are attached) a total of 5,750,000 passenger train-miles annually is "controlled," and consent of the Post Office must be obtained before the times of these trains are altered.

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Taken for a Ride

We have lately read in the newspapers about a lady who made the journey from Euston to Glasgow and back for the expenditure of no more than a penny on a platform ticket. Having failed to leave the compartment before the train started, she was carried through to Glasgow, on the non-stop Royal Scot. In the circumstances the L.M.S.R. made no charge for this 800-mile adventure, and broadcast the undoubted bargain that the lady had secured for her modest outlay. On a recent L.N.E.R. journey we saw a similar mishap handled in a different way. The train was the 12.25 p.m. from Liverpool Street to the East Coast, and on discovering the unintending traveller's plight, the travelling ticket collector succeeded in getting the express stopped at Stratford. Since we cannot imagine, however, that the staff of the Royal Scot would be proof against feminine entreaties for 401½ miles, we can only assume that the lady of Euston accepted her mobile prison philosophically, and, supposing the Liverpool Street victim to have been similarly acquiescent, the L.M.S.R. seems to have handled the situation in its traditional Best Way, seeing that it gained newspaper publicity for a long-uninterrupted run. Passengers on the L.N.E.R. train, no doubt, ignored the energy of the driver in making up lost time, and remembered only the irritation of an unexpected stop at Stratford. We do not, however, wish to advocate the indiscriminate adoption of the L.M.S.R. method, particularly in the holiday season, for it might lead to an inundation of stowaways in the shape of juvenile adventurers with no visible means of support beyond a platform ticket.

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The Week's Traffics

Last week's returns of the four amalgamated companies again show increases in merchandise receipts except on the Southern and for the four companies together the net decrease in merchandise receipts for the year to date is now reduced to £3,500. The respective increases are L.M.S.R. £64,000 and Great Western £60,000; the L.N.E.R. decrease is reduced to £21,000, and the Southern merchandise is £106,500 down. Aggregate passenger train increases for the four companies together amount to £37,244,000, an increase of £837,000 or 2·30 per cent. Total receipts of the four companies to date are estimated at £84,346,000, an increase of £614,000 or 0·76 per cent.

	30th Week				Year to date.	
	Pass., &c.	Goods, &c.	Coal, &c.	Total.	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R.	+ 2,000	+ 12,000	− 1,000	+ 13,000	+ 398,000	+ 1·18
L.N.E.R.	+ 4,000	+ 9,000	−10,000	+ 3,000	+ 40,000	+ 0·16
G.W.R.	− 7,000	+ 2,000	—	− 5,000	+ 108,000	+ 0·77
S.R.	+ 18,000	− 3,000	− 3,000	+ 12,000	+ 68,000	+ 0·61

London Transport receipts for the week were £532,700, an increase of £6,100, bringing the figure for the four weeks of the current year to £2,197,400, which is an improvement of £36,900.

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A Railway's Duty to Passengers

In the Month's Railway Law on page 205 will be found mention of a novel point in an action by a railway passenger in Scotland. The pursuer (plaintiff) claimed £5,000 from the L.M.S.R. Company in respect of injuries sustained while attempting to board a train at Troon. A man

of 70, he weighed 20 stone. He was a regular passenger by the 8.43 a.m. train, and was accustomed to hoist himself into his compartment by putting weight on the step by his right foot. Some time ago the company introduced a new type of carriage with one step instead of two. On the morning of the accident the carriage in which pursuer habitually travelled drew up where the platform was lower than at the place where it usually stopped. The pursuer averred that by the combination of the one step instead of two and the extra height of the step *plus* the height of the platform at the place where the train stopped, a concealed trap or a concealed danger was constituted whereby he met his injury. The Lord Ordinary (the judge of first instance) gave a strong opinion in favour of the pursuer. The Second Division of the Court of Session to which the company reclaimed (appealed) took an equally strong view in the opposite direction. The four judges were unable to find any averments which were relevant to infer fault against the defenders. In their opinion it was a duty of the railway company to take all reasonable steps to provide an access to its carriages which was reasonably adequate and safe for the normal individual. There was no averment on record that the height of the step was unusual or that it was a danger to the ordinary passenger or a trap. The interlocutor of the Lord Ordinary was accordingly recalled and the action was dismissed.

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Overseas Railway Traffics

During the past fortnight Argentine railways except the Buenos Ayres & Pacific and the Entre Rios have been showing decreases in currency as well as in sterling. The exchange has continued fairly favourable, and for the past week it averaged 17·02 pesos to the £ against an average of 17·42 for the corresponding week of 1934. In the past two weeks Buenos Ayres Great Southern receipts have dropped by 699,000 pesos and £34,209, Buenos Ayres Western receipts by 354,000 pesos and £18,728, and Central Argentine receipts by 458,000 pesos and £20,451. Buenos Ayres & Pacific earnings have, on the other hand, improved by 36,000 pesos and £5,474, although for the four weeks of the current year its aggregate currency earnings are down by 7,000 pesos. The Canadian Pacific has not done well during the past fortnight as its gross receipts have fallen by £16,800 in that time.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	4th	71,974	+ 3,547	289,112	+ 6,520
Buenos Ayres Great Southern ..	4th	115,394	— 16,638	444,541	— 49,486
Buenos Ayres Western	4th	33,608	— 10,020	149,317	— 26,294
Central Argentine	4th	121,093	— 12,337	488,473	— 29,695
Canadian Pacific	29th	485,600	— 16,400	12,764,600	— 134,000
Bombay, Baroda & Central India	16th	172,200	— 14,550	2,561,400	+ 9,375

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Overseas Visits for C.P.R. Employees

The Canadian Pacific Railway is promoting interest among its employees in the attractions of Great Britain by organising so-called "house parties," allowing participants to visit this country for periods ranging from one day to a week. In 1934 a party travelled 6,000 miles by sea to enjoy twenty-four hours in London, while on Friday last eighty-three members of the company's staff returned home on the C.P.R. liner *Duchess of Richmond* after a seven-day tour through many historic and beautiful parts of the British Isles. Places visited included the Trossachs, the Border Country, Glasgow and Edinburgh, the Lake District, Chester, Stratford-on-Avon, Oxford and Windsor. Although not arranged to be directly educational in the railway sense, such tours give the opportunity of studying railway methods, and from that point of view it is a fortunate characteristic of our country that in travelling between the different centres named so much opportunity is afforded in so short a time for seeing transport activity under widely varied conditions. If Canada considers it worth while to cross 3,000 miles of sea for this purpose, we, too, with only the Channel between us and the lessons of new operating ideas, might well consider the organisation of similar tours.

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The U.S.A. Railways in a Vicious Circle

Our American contemporary the *Railway Age*, discussing recently the financial aspect of the railway situation in the United States, revealed the vicious circle in which the railways have to operate. Wages, now 5 per cent. higher than in 1929 on an hourly basis, are excessive in proportion to gross earnings, which are 47 per cent. less. The net operating income is as much as 67 per cent. less than in 1929. The advances in wages made since June 30, 1934, are the principal reason why the number of railway employees was almost 40,000 less in April, 1935, than in the corresponding month of 1934. The same reason is also largely responsible for the intensive production of labour saving devices and the corresponding reduction in the number of railway employees, which is 670,000 less than in 1929. A consequence of the drop in net railway operating income is that the railways are making purchases of probably a billion dollars (over £200,000,000) a year less than in 1929, thereby contributing greatly to unemployment. Thus the persistent attempt to make employment the primary object of industry—in spite of the decreasing necessity for manual labour when machinery is available—is failing. The alternative is for people to recognise the fact that the true purpose of industrial activity is to provide goods and services for the benefit of individuals—with the minimum of compulsory labour.

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It's Quicker by Rail

There is a becoming fitness, if not a shade of irony, in the application of the slogan "It's quicker by rail" to the photograph we reproduce on page 208, showing the movement by rail a few days ago of 13 motorcars and 9 six-wheel gun-towing units from York to the South of England. The Artillery Transport Company of York, where the Northern Command has its headquarters, was responsible for arranging the carriage of this equipment to the South for training purposes, and chose the L.N.E.R. as its carrier on this occasion. The choice of rail transport may have been guided by the fact that not only is it "quicker by rail" but, judging by road accident statistics, it is undoubtedly safer. Quite apart from the saving of time in transit, the motor drivers, who travelled by train as well, were ready for duty on arrival instead of being fatigued by overnight driving and unable to start work without rest.

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The B.M.A. takes its Own Advice

Having grown tired of prescribing a long sea voyage for others, the British Medical Association recently decided to accept its own hackneyed advice and arrange for itself a 106-day round-the-world tour. The excuse and occasion for this excursion is the association's annual meeting in Melbourne, Australia. The arrangements for the tour were left in the capable hands of the Pickford's Travel Agency which has gone to great pains to see that no doctor shall be lost on the way, for each member of the party has been supplied with a carefully compiled diary and itinerary of the journey. This guide, philosopher, and

friend, which bears its owner's name embossed on the rich blue leather cover, is full of information and interest. In addition to giving details about the journey, it also tells its owner when to adjust his watch, when there will be no Wednesday in the week, when he will require his passport, and even when and how to tip. A map of the journey is included at the back of the diary, showing the route to be followed via Canada and U.S.A., the Pacific Islands, New Zealand, Australia, the West Indies, India, the Red Sea, Egypt, and the Mediterranean. Members of the party left London on July 26 and are not due back till November 8.

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Effective Publicity Co-ordination

Municipalities of pleasure resorts throughout the country are constantly offering in their advertisements to send gratis on application a guide book to their town and its attractions. Granting that these are written in sufficiently alluring terms to justify their object, every applicant is a potential passenger, and the Southern Railway is fully alive to the fact. Shortly after a request for a guide book has been satisfied, the recipient also receives a letter from the Southern, in which " the Traffic Manager presents his compliments and has pleasure in sending the accompanying literature containing particulars of the train service and cheap ticket facilities associated with the town from which a guide book has recently been obtained." Not only is the idea sound, but also the selection of literature is good. This includes timetable leaflets, a folder of fares, particulars of cheap day excursion tickets *from* the resort in question, and details of the local seven-day holiday season tickets. Should the inquirer's thirst for information still be unassuaged, he is politely told in the final paragraph of the Southern Railway letter that " any further information desired will be gladly furnished on application." Apart from the natural desire of a railway to secure as great advantage as possible from municipal advertising, to the cost of which it so largely contributes, the potential customer is usually grateful for the attention.

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Funicular Railway Development in Italy

Italy is sparing no pains to improve tourist amenities in a country which abounds with natural beauties, and the ascent of her mountains, which in the past have been less well known to British tourists than those of Switzerland and Austria, has been given special consideration. In our issue of February 8 last we illustrated the new aerial ropeway up Mount Gran Sasso d'Italia, and now the ascent of two mountains, the views from which are among the finest in Italy, has been facilitated for the tourist by the reconstruction of the funicular railways up their slopes. One recently inaugurated is the new line to the summit of Brunate the 2,300 ft. wooded peak which over looks the town of Como and the famous lake. This line, with the introduction of improvements in design and engineering technique, is one of the finest funiculars in the world. The speed has been increased, additional safety devices have been introduced, and the conductor is in constant touch by telephone with the station staffs. Of similar type is the reconstructed funicular from Varallo to the Sacro Monte in the Sesia Valley. Varallo, a picturesque old town, is situated among wooded hills at 1,480 ft. Above it, rising to about 2,000 ft., is the Sacro Monte of which the point of interest is its sanctuary. There are on the slopes about forty chapels, some with fine frescoes. The sanctuary itself is famous for its " Black Madonna." Some 8,000 pilgrims visit the sanctuary every year.

Locomotives at the Brussels Exhibition

Although few in number, the locomotives shown at the exhibition now being held in Brussels form an interesting collection. The latest Belgian Pacific, which in outward appearance bears a striking resemblance to the L.N.E.R. *Cock o' the North*, and the large Mountain and 2-10-2 French engines are seen together with the unorthodox eight-cylinder Franco articulated locomotive, the design of which appears to mystify many of those who inspect it. But for the clearly produced sectional and other drawings displayed on the stand adjoining the engine itself it is, we think, doubtful whether anyone not already acquainted with the design (fully described in THE RAILWAY GAZETTE of December 2, 1932) could follow the details of construction and operation. The cab fittings on the express passenger locomotives present several items of interest, noteworthy among them being the double firehole doors of the Belgian engine, with their balanced and semi-automatic opening and closing mechanism, the sanding apparatus, and other details. We confess to having been impressed by the design and working of the locomotives used for hauling the trains for conveying visitors round the exhibition grounds on the 1 ft. 11½ in.-gauge track railway built for the purpose. These appear to be powerful machines capable of well holding their own on the fairly stiff grades met with on the circular route, and, judging from appearances, they have cylinders of approximately 8 in. diameter, supplemented by large partly oil-fired boilers and other " main line " features. The locomotives are each operated by two men and we computed the load to be in the neighbourhood of 40 tons with all seats occupied. When they are working on the grades the exhaust note is worthy of a full size engine and, indeed, when heard and not seen, they might well be mistaken for standard gauge units.

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Locomotives and the Track

In his report summarised in this issue, on the accident which occurred on February 25, 1935 near Ashton-under-Hill station on the London Midland & Scottish Railway, Colonel Mount commented in detail on the behaviour of the locomotive concerned, a 0-6-4 type tank engine of the 2000 class. This type of engine has a frequency of oscillation depending on such factors as weight distribution, the periodicity of the front coil springs, the Cartazzi slides, the laminated bogie check springs, and the action of steam in the cylinders. Should track variations, insufficient in themselves to cause serious movement in a less sensitive machine, follow in sequence so as to coincide sufficiently closely with the engine's natural frequency under the conditions of the moment, oscillation may be rapidly and violently induced, and heavy lateral forces set up which in turn tend to displace the track bodily, or, if the fastenings are sufficiently weak, to spread the gauge, as occurred in this instance. In view of the circumstances of this derailment, it was decided to make a trial under altered conditions, which included the replacement of the leading axle Cartazzi boxes and of the coil springs by standard type boxes and laminated springs, the replacement of the bogie by a standard bogie with side bolsters, and other measures. Comparative tests at speeds varying from 35 to 60 m.p.h. between one engine so modified and a standard example, were carried out a few days after the accident on a considerable length of second class track, and the conclusion was reached that the unmodified engines were not suitable for working trains at speeds over 45 m.p.h. The alterations, it is stated, undoubtedly made for improvement, oscillation and roll being damped out, so that even when running at 60 m.p.h. the riding was satisfactory.

British Railway Interim Dividends

THE interim dividends of the four group railways which were announced last week were quite up to general expectations, and in two instances showed an improvement on the distributions made for the first half of 1934. On July 25 the London Midland & Scottish directors announced that the interim payments on the 4 per cent. senior preference stock and on the 5 per cent. redeemable preference stock (1955) which ranks *pari passu* with it would be raised from 1½ per cent. to 2 per cent., and from 1⅞ per cent. to 2½ per cent., respectively. This brings these dividends up to their normal half-yearly amounts, and means an additional distribution of £655,163 for the six months. The Southern announcement was made the same day, of 1 per cent. on the preferred ordinary stock, which got nothing at this time last year, but received 4 per cent. for the whole year 1934. An additional £275,866 will accordingly be required for this interim distribution. In the announcements made on July 26 by the London & North Eastern and the Great Western Railways there is no change from last year's interim payments. The Great Western directors, after again making an appropriation from the free reserves, announce an interim dividend of ¼ per cent. on the consolidated ordinary stock. For the whole year 1934 this stock received 3 per cent. The London & North Eastern again pays in full for the half-year on the first and second 4 per cent. guaranteed stocks, but holds over the question of a distribution on the £48,222,669 of 4 per cent. first preference stock and on the £4,014,400 of 5 per cent. redeemable preference stock (1955) which ranks *pari passu* with it, until the accounts for the whole year are available. These two preference stocks received 3¼ per cent. and 4⅛ per cent. respectively for the whole year 1934.

Statements accompanying the dividends were, however, not so encouraging at first sight, as they did not show in any case except the Great Western an increase in net revenue for the half year. On the L.M.S.R. the increase in gross revenues was wholly neutralised by the advance in expenditure, and the net revenue was consequently unchanged. According to the weekly traffic estimates the Southern should have had a gross increase of £8,000 in railway receipts for the 26 weeks, but actually it had a decrease of £30,000, and as railway expenditure increased by £45,000 and the net receipts from ancillary businesses, &c., were about the same, net revenue is approximately £75,000 less. On the London & North Eastern the decrease for the half year in the receipts of railway and ancillary businesses and miscellaneous receipts (net) was £74,500, and the estimated increase in expenditure has been £252,400, leaving a decrease in net receipts of £326,900. Great Western gross receipts from railway and ancillary businesses were £35,000 more than in the first half of 1934, expenditure on railway and ancillary businesses increased by approximately £18,000, and the increase in net revenue from all sources including interest amounted to £25,000. It is evident from the statements that the greater part of the increase in expenditure was in salaries and wages. On the L.M.S.R. salaries and wages accounted for an increase of £200,000, whereas under other headings there was no change. London & North Eastern salaries and wages accounted for £227,800 of the increase in expenses, which was principally due to the partial restoration of the percentage deductions. Similarly, on the Great Western, the expenditure for the half year included approximately £120,000 in respect of this partial restoration and of the cost of Jubilee concessions.

In the statements as they stand there is certainly little to indicate an improvement in the dividends for the whole year, and the Southern directors say as much in announcing the concession to the preferred ordinary stockholders. At the same time there are encouraging features. Merchandise traffics which in the earlier part of the year were disappointing have been steadily improving in the last few weeks except on the Southern. The first half of 1935 included one less weekday than that for 1934, but this will be balanced in the current half year, as this period will include an additional weekday. Passenger train traffics continue to be satisfactory. Generally speaking, in their interim dividend declarations, the directors have shown a sympathetic consideration for the shareholders without impairing the soundness of the financial position.

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Northern Ireland Transport Act

IN its passage through Parliament the Road and Railway Transport Act (Northern Ireland), 1935, which received the Royal Assent on July 16, underwent very little alteration. It was based on Sir Felix Pole's report, which was published in July, 1934, on his inquiry, made at the request of the Government of Northern Ireland, into the transport situation in Ulster and the possibility of some co-ordination of road and rail interests. The railways of Northern Ireland began to experience the serious competition of road transport in 1924, mainly on the passenger side, but so far as passengers were concerned this competition had at the time of the report come under regulation and control partly by means of public enactments and partly by the action of the railway companies themselves in acquiring omnibus services from small owners, and running them themselves. But there was at the time when Sir Felix Pole was conducting his inquiry, no check on the road hauliers in the matter of goods traffic, and there was waste and overlapping of services. Consequently there was an unanswerable case for co-ordination of road and rail services. To effect this Sir Felix Pole proposed the formation of a road transport board to take over all passenger and goods road motor services operated by road transport carriers and the road services worked by the railway companies in Northern Ireland, the board and the railway companies to pool their receipts. Formation of a standing joint committee of representatives of the board and of the railway companies, on lines similar to that adopted with London Transport, was also recommended. Subject to a right of appeal to a proposed Transport Appeal Tribunal, responsibility for fixing rates and fares should rest with the board and the railway companies, and this tribunal should replace the Railway & Canal Commission and the Road Transport Fares Tribunal set up under an Act of 1929.

The Government of Northern Ireland promptly accepted these recommendations in principle, and the Bill to carry them out was introduced in the House of Commons in May of this year. Sir Felix Pole's proposals were set out in THE RAILWAY GAZETTE of July 27, 1934, on page 139, and the scheme of the Bill was outlined on page 937 of our issue of May 10, 1935. The second reading was carried on May 16 after two days' debate by 26 votes to four, and the third reading was carried on June 4, when the Bill was passed and ordered to be carried to the Senate, which made only a few amendments. The Act establishes a Road Transport Board of 5 to 7 members, which will acquire every road motor undertaking operated for hire or reward in Northern Ireland, including the passenger and freight road transport undertakings of the railway companies (except the Londonderry and Lough Swilly), but not the tramway and omnibus undertaking of the Belfast Corporation, nor certain vehicles specially exempted such as those of local carriers in Belfast and Londonderry, taxicabs, hotel buses, those of funeral undertakers

or furniture removers, as well as vehicles used by firms for delivering goods sold or hired or subject to a process in the course of their business. There are also special exemptions for vehicles used in connection with agriculture. As originally drafted farmers were enabled to carry for and help neighbouring farmers up to a distance of half-a-mile, but in Committee in the Commons an important amendment was made so as to enable farmers to give this assistance up to any extent to which the Minister of Home Affairs may agree.

It will be the duty of the board to provide an efficient and properly co-ordinated service. Consideration for the transfer of undertakings will be settled, in default of agreement, by an arbitration tribunal of three members, the chairman to be a judge or a practising barrister or solicitor of ten years' standing. The words " or solicitor " were added in Committee in the Commons. Where the consideration does not exceed £5,000 the owners of the undertakings shall be entitled to have that amount paid in cash. This was an alteration made in the Senate from the original " that amount may be paid in cash." A solicitor, as well as a judge or practising barrister, may also be chairman of the new Transport Appeal Tribunal of three members, which will have jurisdiction as to revision of rates and fares and facilities, and will take over the present powers and duties of the Railway & Canal Commission and of the Motor Vehicles Tribunal established in 1929. Another of its duties will be to confirm pooling schemes submitted to it. Appeals may be made from this tribunal on points of law to the Supreme Court, and an amendment made in the Senate alters the original provision that the decision of that Court should be final. Persons employed by transport undertakings for two years previous to transfer shall be entitled to compensation if their services are not retained. In the original draft the period was three years. Another Commons amendment makes obligatory, instead of permissive, contributions by the board to superannuation funds, &c., and in the section for protection of shipping companies the Senate made an amendment that no undue preference or advantage should be given to vessels of any particular ownership instead of the original words " no preference or advantage of any kind."

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Railways in Queensland

ON Wednesday the Queensland Government Railways, now forming the most extensive system in Australia, attained its threescore-and-ten, for on July 31, 1865, its first section was officially and ceremoniously opened from Bigge's Creek (now Grandchester) to Ipswich. The ceremony was performed by the then Governor, Sir George Bowen, and Lady Bowen. On the previous January 11 the first railway whistle was heard in Ipswich, and on April 25, too, Mr. Wilcox, representing the contractors (Peto, Brassey & Betts) gave what appears to have been a kind of picnic, to which various distinguished guests were invited and conveyed behind the locomotive *Pioneer*. The Act of Parliament governing railway construction had been passed on September 23, 1863, the Bill having been introduced by Mr. A. Macalister, then Secretary for Lands and Works. Macalister became known as the Father of Queensland Railways, a title which he undoubtedly deserved. Operations were begun on February 25, 1864, when Mr. Macalister invited Lady Bowen " to honour the event by turning the First Sod at the same time presenting the spade." The old official programme recorded further that the Governor and his lady were to be " accompanied by an Escort of Volunteer Cavalry," and that they were due to arrive at " Half-past Eleven, and be received by the Committee; the Volunteer Rifles and Artillery being present." The programme then announced that " Lady Bowen will perform the ceremony, depositing the Turf in the Barrow, which will be wheeled to the tip by the Minister for Lands and Works, on which a salute will be fired by the Volunteers." On July 14, 1865, the Queensland Parliament was adjourned for a fortnight pending the climax of official opening on the last day of the month.

During 1864, £157,776 had been spent on railway construction, and rolling stock and other equipment had been imported from England. The rolling stock, brought out in ships of the Black Ball Line, was assembled at Ipswich, where the Queensland Government Railways' works are still situated. The first locomotives were four of the 2-4-0 type, built by the Avonside Engine Company at Bristol. They were wood-burners, and were capable of hauling 70 tons up a gradient of 1 in 50. The original rails, like those of today, were flat bottomed, but they weighed only 30 lb. to the yard. A rather curious theory was put forward at the time, namely, that it was " unsafe to use heavier rails or rolling stock on a 3 ft. 6 in. gauge." The choice of gauge had been a subject for rather stormy dispute. Extensions were made and traffic was inaugurated on the Ipswich-Brisbane line in 1875, Brisbane despatching its first train on June 14. Until July, 1876, however, the route was broken by the river at Indooroopilly, across which passengers and freight had to be ferried on a punt. Railway development has been active in Queensland ever since, and at the present time the country contains 6,566 miles of route. Of this mileage, 30 miles are built to the 2-ft. gauge, and 69 miles are contributed by the 4-ft. 8½-in. gauge Kyogle Railway into New South Wales. The rest of the system is all of the original 3-ft. 6-in. gauge.

The latest available statistics, for the year ended June 30, 1934, show that there are 776 locomotives, 1,024 passenger vehicles, 171 railcars (to the development of which Queensland has for years given particular attention), 18,916 goods wagons and 179 other vehicles. For the same period, gross receipts amounted to £6,118,898 and expenditure to £4,403,370, giving a net revenue of £1,715,528. As recorded in our issue of November 23, 1934, the gross earnings showed an increase for the first time since 1928-29, amounting to £233,230 compared with the previous year, or 3·96 per cent. The operating ratio of 71·96 per cent. followed 72·10 per cent. in 1932-33. Rail motor operation in Queensland was described in an article in our Overseas Number of November 28 last, and a comprehensive illustrated review of Queensland Government Railways activities appeared in THE RAILWAY GAZETTE of November 13, 1925.

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Three Locomotive Derailments

BY a coincidence, to which we recollect no parallel, there were, within the period of exactly one month between February 20 and March 20 last, three derailments of passenger trains on the former Midland Section of the L.M.S. Railway; in the first and second cases the drivers concerned were unfortunately killed. One was due mainly to defective track; another to defective track and an unsuitable type of engine, and the third mainly to an unsuitable type of engine. The first was at Hazelwood on the Duffield-Wirksworth branch, about 9 p.m. on February 20; the second was near Ashton-under-Hill on the Barnt Green-Evesham-Ashchurch branch, about noon on February 25; and the third was near Moira on the Burton-Leicester main line, about 7 p.m. on March 20. The Hazelwood accident was inquired into by Colonel Trench and the other two by Colonel Mount. The Hazelwood report was dealt with in our issue of July 12 and we have now combined our summary of the Ashton and Moira

reports. In no case was there an unwarranted speed, as on none of the lines was there a speed limit. It may be here also remarked that the Wirksworth and Evesham branches are in the category of third-class roads, *i.e.*, branch passenger lines over which speed does not generally exceed 45 m.p.h., and the traffic is fairly light. The Burton-Leicester line is second-class, *i.e.*, a passenger road, other than a main trunk passenger line, subject to speeds over 45 m.p.h. Though we have dealt with Colonel Trench's report on the Hazelwood derailment, it is necessary, for a consideration of the two other reports, to observe that it was mainly due to a weak track. There was no question there of the engine—one of the 0-6-0 tender type—being unsuitable; a speed restriction has since been ordered and the 21-ft. rails, which are standard on that branch, are to be replaced next year.

As is nearly always the case with derailments, where so many factors may enter the question, the reports on the Ashton-under-Hill and Moira accidents are somewhat lengthy, but we have reproduced the main features and interconnected them, and, further, mentioned the salient points of the Swinderby derailment of 1927 in which the same class of engine was concerned. Sir John Pringle conducted the 1927 inquiry, but it is evident that Colonel Mount had all the facts in his mind, and that led to his making, in less than three weeks after the Ashton accident, a trial run with a 0-6-4 tank engine of the " 2000 " class. That was done on March 15 between Burton and Leicester on engine No. 2011, and the most remarkable of the coincidences of these three accidents is that it was the same engine that, five days later, left the road at Moira. As we have said, many points have arisen out of these reports; we have dealt with each in our summaries and must leave it to our readers to make their own deductions therefrom. We must, however, give credit to the L.M.S.R. for the bold policy taken of withdrawing all forty engines of this type. That decision was assisted by the fact that the engines possess superheater boilers of standard design and these can be utilised for other engines, and by modern tank engines, with lighter axle loading and higher tractive effort, now becoming available.

Though, as we have observed, we are, because of the many points raised in these reports, leaving our readers to make their own deductions, we feel that one matter should be emphasised. It is to be found in the Ashton-under-Hill report and is in that on Hazelwood also. We refer to " the value of the information to be gained from riding on the footplate by these responsible for the maintenance of permanent way." As Colonel Mount added in his Ashton report, " there could have been no better practical instrument than this type of engine for ascertaining where track defects exist." We feel, further, that the way these " 2000 " class engines knocked the road about should have been more generally known. The Swinderby derailment, in which there was a loss of life, occurred on June 6, 1928, and was inquired into by Sir John Pringle, whose report, which, of course, became public property, revealed the weakness. Fourteen months later a similar engine spread the road at Ashton-under-Hill, but the District Engineer did not have a speed restriction because the engine concerned was soon to be taken off. This, however, was not done, as " these engines have been consistently running in this service since they were put on in June, 1929." The District Engineer, further, thought that the trains were stopping at every station and running at slow speeds; neither of these conditions prevailed. It was this, no doubt, that led to Colonel Mount, when advocating a review of the classification of branch lines, saying that closer liaison between the departments concerned should be maintained.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Electric Headlights

53, Victoria Street,
Westminster, July 20, 1935

To the Editor of The Railway Gazette

Sir,—I should like to make one or two remarks on the conclusions reached in the editorial on " Electric Headlights " in your issue of July 19. I introduced them into South Africa in 1904 to prevent head-on collisions due to wrong setting of points at crossing stations, and owing to trains meeting between stations on wrong orders. Strays on the right of way did not enter into the matter, as our cattle guards took care of that, and it was only bad for the " coo." I do not remember any derailment during my incumbence from straying stock. Many Indian lines, such as the E.I.R., O. & R., and the E.B.R., which were the first to install searchlights, are well fenced, and other lines, not fenced, use cattle guards. Derailments are rare, and except for an occasional one due to buffalo and the classic B-N.R. elephant, may be disregarded. I may mention that my experiments on the E.B.S.R. in 1895 with gas head and tail lights were also made to avoid collisions, both head and tail.

As a matter of fact, when I took up searchlights in South Africa, I went at once into the question of signal visibility and dazzle, and satisfied myself, at least, that no difficulty arose. The lights in those days were arc; now they are filament, and even with arc lights ordinary oil signal lamps were seen, even in the presence of an opposed light. Surely if this was a difficulty it would have been found so on lines like the Pennsylvania, where colour-light signals are commoner than in this country and every engine is headlight fitted. Dazzle, while a slight difficulty, is not nearly so great as might be expected, and we did not, nor can America, find it a fatal objection, as there it would have prevented extension and standardisation if it were so. The locomotive headlight cannot be compared with that of motor vehicles, which career horizontally all over the road and are as a majority badly directed. In the case of the locomotive a coloured glass screen can be fitted in the cab windows or at the side of cab as a permanency.

I agree without reservation that accidents to staff might possibly occur through dazzle, but there again there are large numbers of fatalities which are due to absence of warning of the approach of a train ; these would not occur with the searchlight, and, after all, the railway man is expected to take care of himself, while the railway is expected to take care of the passenger, and is paid to do so.

Yours truly,
P. A. HYDE

[In this connection we quote the remarks of Colonel Mount in his recent report on the King's Langley accident:—" My attention has been called to a suggestion that these collisions would have been prevented by the use of searchlights on the engines. Owing to curvature of the line at the site I think it very doubtful whether such equipment would have had even preventive effect; but, in any case, in main line operation in this country, it would not be desirable from a safety point of view. Apart from the well known inherent disadvantages of an intense beam of light, not only to the approaching driver but to the driver using it, steps are having to be taken today to safeguard the view of enginemen from interference by extraneous road light signals and by street and sign lighting."—Ed. *R.G.*]

PUBLICATIONS RECEIVED

Handbook of Trinidad and Tobago. Trinidad: Government Printing Office, Port-of-Spain. 8½ in. × 5½ in. 224 pp. Illustrated. Folding map. Price 2s. 6d. net.—This guide book is addressed to all in search of knowledge regarding Trinidad and Tobago and their institutions, a purpose it fulfils with great completeness and, one would imagine, as much value to the resident as the tourist. Citizens of other countries would doubtless welcome such a book at such a price for its comprehensive yet concise presentation of the principles upon which the community is organised and run. An historical introduction is followed by a generally descriptive chapter, and others dealing in greater detail with the constitution of the colony, its social services, industries, cost of living for residents and visitors, and so on. Tourists are well served by one section of the statistical and other appendices giving particulars of suggested excursions. Internal and external communications receive adequate treatment. The railway system is briefly described, and prospective visitors will be encouraged by the information that the first class fare is one penny a mile, and the third class a halfpenny. There are many full-page illustrations and a folding map in colours.

Locomotives à Grand Vitesse à Bogie et 4 Essieux-Accouplés. By André Chapelon. Paris: H. Dunod, 92, Rue Bonaparte (VI). 12 in. × 8⅜ in. 160 pp. Illustrated. Six folding plates. Price 34 fr. 20.—This work, which Baedeker would describe as "for experts only," deals in abundant detail with the design and performance of those epoch-making locomotives, the P.O.-Midi 4-8-0's, and is a reprint of M. Chapelon's articles in the *Revue Générale de Chemins de Fer*. It is always interesting to have the designer's reasons for the adoption of certain features and ratios, and here, for the modest sum of approximately nine shillings (at the present rate of exchange), the purchaser gets not only that, but also a treatise on the design of modern four-cylinder compound locomotives and a very clear idea as to exactly what such machines will do on the road—and why. Numerous dynamometer car charts are incorporated in the folding plates, and record the horse-power, drawbar pull, speed, and cut-off. They are not reproduced in that annoying isolation which leaves the reader wondering suspiciously what was happening in the various power-producing and transforming constituents, but are backed up in the text by explanations, and, better still, by indicator cards and a thorough investigation of boiler and cylinder performance. The correctness of the designer's conclusions are shown best by the remarkable performances (frequently recorded in the pages of THE RAILWAY GAZETTE) of the P.O. 4-6-2 and 4-8-0 locomotives, in the design of which M. Chapelon exercised his powers to the full and adopted revolutionary principles, more especially as regards the valve motion, cylinders, and exhaust arrangements. A few of the general arrangement drawings in the book are lacking in clearness, but this is the only blemish in the production, except, perhaps, that as those designers who understand the French language are likely to thumb their copies well, stiff covers would have been an advantage.

Dauerfestigkeitsversuche mit Schweissverbindungen. (Researches on the Fatigue Strength of Welded Joints). 1935. Berlin: V.D.I.-Verlag. 12 in. × 8¾ in.; 46 pp.; RM. 8.50.—This book contains the report of researches into the fatigue strength of welded joints, carried out during the period 1930 to 193 under the ægis of the Welding Technology Committee set up by the V.D.I. (Association of German Engineers). The three main sections deal with the experimental results obtained in the Testing of Materials Laboratories at Berlin-Dahlem and the Technische Hochschule, Dresden, results obtained at the Technische Hochschule, Stuttgart, and a detailed summary by Dr. Kommerell, Director of the German State Railway Company, Berlin. While the Association of German Engineers has undertaken the general organisation of this important joint research, the German State Railway Company has been responsible for the material side of the work. The expenditure involved—only RM. 47,000 or about £4,000 at the present rate of exchange—is almost incredibly small compared with the scope of the research and the value of the results obtained. The practical value of the information is further increased by the fact that the testing departments at Berlin, Dresden and Stuttgart used different machines and different methods in their investigations, thus considerably broadening the basis on which Dr. Kommerell has been able to base his conclusions.

At Dresden and Berlin the tests were made by means of "vibration bridges," *i.e.*, lattice bridges of 15 metres (49 ft. 2 $\frac{7}{16}$ in.) span, in the bottom chord of which the test pieces (1,750 mm. or 5 ft. 8$\frac{7}{8}$ in. in length) were secured by different welded connections and then subjected to alternating loads. The investigations of Professor Graf, at Stuttgart, throw light on the very interesting relations between constructional form and fatigue strength in welded connections—a problem, the solution of which will determine the extent to which welding is used in lattice bridges for railways. Hitherto, with few exceptions, welded railway bridges have been of the plate girder type.

Among the many new results of this series of researches, which cannot be mentioned in detail, special attention may be drawn to the publication of new vibration coefficients (so-called "γ factors") for use in the design of riveted and welded lattice bridges. Another important point is the demonstration of the fact that the fatigue strength of fillet welds in high-tensile structural steels is no higher than that of fillet welds in ordinary structural steel. Although the text of this report extends only to 46 pages, it is packed so closely with new information that it may justly be described as the most valuable publication of recent years in the technology of welding for steel structures.

Plating Rectifiers for Small Outputs.—A very compact rectifier for electro-plating purposes where only a small output is required is described in a new folder received from the Westinghouse Brake & Signal Co. Ltd. This instrument, which is rated at 6 V. 20 A. and is suitable for 200-250 V. supplies, consumes only 275 W. at full load. It is intended for the deposition of gold, silver, platinum and other rare metals as required by engravers and jewellers. Simplicity of operation is a hardly less noteworthy feature of the apparatus than its economy.

Electric Tools.—Portable and stationary electric tools, complete kits, and a full range of spares and accessories, are listed in this revised illustrated catalogue published by S. Wolf & Co. Ltd., Pioneer Works, Hanger Lane, Ealing. The opportunity has been taken of making considerable improvements compared with earlier editions, so that the review of the equipment now presented in pictures and text makes the catalogue worthily representative of the latest developments in workshop appliances of the types covered. Grinding, polishing, and drilling are the principal duties catered for by the apparatus, and the sturdy constructional principles incorporated in all the tools are well brought out in two pages of sectional diagrams.

Superheater Equipment. — The Superheater Co. Ltd., Bush House, Aldwych, W.C.2, sends illustrated particulars of superheating equipment for locomotive and stationary boilers. The well-known Sinuflo elements are described in pamphlet L.13. They are the product of careful research aimed at achieving the most efficient turbulence without undue drop of steam pressure or excessive resistance to the gas flow, and among the locomotive classes to which they have been fitted are Southern Railway "King Arthurs" and L.N.E.R. Pacifics. Melesco dryers for locomotives are described in pamphlet D.2, and for stationary engines in pamphlet D.3. It is claimed for these units that they not only ensure the supply of dry steam to the superheater, but extract scale-forming impurities, so keeping the interior of the elements clean. The water is returned to the boiler, against pressure, by kinetic energy. There are no moving parts to require maintenance. A dryer with similar characteristics is supplied for pipe lines carrying steam, compressed air, or any kind of gas from which impurities have to be removed. These units are described in pamphlet D.4

THE SCRAP HEAP

A new Italian official decree allows special railway reduction for honeymoon couples and those celebrating their silver and golden wedding anniversaries. The reduction is 80 per cent. on any journey to and from Rome, applicable to those who were married in Italy; those married outside obtain a reduction of 70 per cent.

* * *

The little man dashed up the platform as the train was moving out, and made a frantic rush for one of the coaches, at the window of which a young woman was waving her handkerchief. He was about to grasp the handle of the door when a porter pulled him back.

"You mustn't board the train while it's moving," said the porter. "Besides, that compartment's engaged."

"Engaged!" yelled the little fellow, dancing about in his rage. "Of course it's engaged! I engaged it, and that's my wife at the window—off on her honeymoon!"—*From the "Canadian National Railways Magazine."*

* * *

The Electrician of July 24, 1885, recorded that on the occasion of the visit of the Prince of Wales (afterwards King Edward VII) to Preston, the Royal train was lighted by electricity. Two headlights of 50 c.p. each were used and forty 20 c.p. lamps were distributed in the saloons. These were of Woodhouse and Rawson 40-V type supplied from E.P.S. accumulators.

EARLY ROAD-RAIL CO-ORDINATION

We are indebted to Mr. H. W. Bardsley, Honorary Librarian of the Railway Club, for calling our attention to an early example of rail and road co-ordination in London. The timetable of the North London Railway for August, 1870, announced: "arrangements have been made with the London General Omnibus Company to extend to and from Broad Street Station, the omnibus services now working to and from Walham Green, so as to afford a communication between the Broad Street Terminus, and Cheapside, Post Office, Strand, Charing Cross, &c." The fare from Broad Street to the General Post Office was 2d. The same timetable showed that omnibuses between Clapton and Hackney station (fare 3d.) were timed to connect at the latter point with trains to and from Broad Street.

* * *

In the 1840's the cattle traffic of the L.N.W.R. necessitated the erection of a large cattle station at Camden. The animals, who always, in their excitement, ran the wrong way, often escaped on to the main line and charged the trains, getting, of course, the worst of such encounters. The cattle landing was ultimately removed to the Maiden Lane Station, which reduced, but never entirely stopped, such casualties. These were not confined to bullocks from the cattle pens. A sharp watchman, in a dimly lighted goods shed at Camden, once found a bear, which had escaped from Euston, crouching against a wagon, and, taking it for a thief, he pounced upon it, but retreated in dismay, unhurt. A hue-and-cry was raised, and poor Bruin was captured, after a spirited chase. At another time a tiger in a case fell from a load on to the railway. The fall smashed the case, and the tiger trotted along the line. Some soldiers were obtained from a neighbouring barrack and went in pursuit. They found that the signalman had climbed a telegraph post to get out of the way, but on nearing the tiger they discovered that they had marched without ammunition, and the tiger fell to the gun of a gentleman who lived near the spot. A case containing a crocodile similarly fell from a train, and an inspector, walking the line, thought he was nearing a man run over, but he speedily went back for assistance, on arriving at the object of his attention.—*From "Fifty Years on the L.N.W.R.," by David Stevenson.*

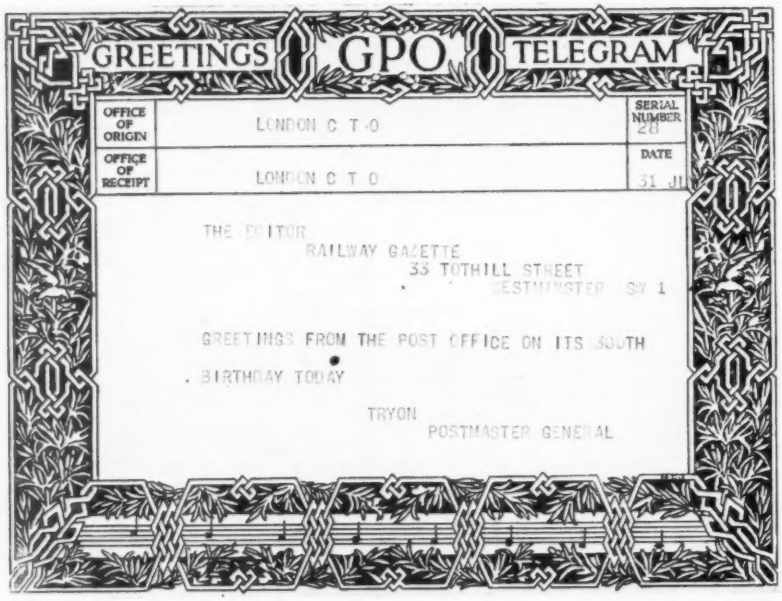
* * *

A few years ago the Canadian authorities installed baths on the Transcontinental trains. So little use, however, has been made of them that it is now announced they are to be dispensed with.

* * *

TRAVELLERS' AIDS

On his way to a Roumanian railway station a tourist made a hurried purchase of a phrasebook, which the stationer assured him would be of great assistance to him in his travels. Examining it later in the train the first "useful" phrase that met his eye was, "Dear! Dear! Our postillion has just been struck by lightning." That illuminating aid caused him to turn to the title-page, where he discovered the date of publication—1840!—*From the "Morning Post."*



A progressive tercentenarian uses its latest facility to greet a junior who has just celebrated his one hundredth birthday (see editorial note on page 177)

LONDON LAUGHS . . *By* LEE

STATION INQUIRY OFFICES

"I want you to tell me who that girl is, where she is going, by what train, and do you think I have an earthly?"

A railway terminus has again inspired Lee of "The Evening News"

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

INDIA

New Railway in South India

The Chamrajnagar-Satyamangalam Railway, which has already been referred to in these columns on several occasions lately, was recently the subject of discussion between Mr. P. R. Rau and the Madras Government at Ootacamund. It is understood that an agreement has been reached for the construction of the British India portion of the project provided it is guaranteed by the Mysore Durbar. The South Indian Railway originally objected to the construction of the line, but has since withdrawn the objection.

Monsoon Damage to Railways

Heavy monsoon rains have caused the temporary dislocation of railway traffic in various parts of the country. A landslip on the Darjeeling-Himalayan Railway necessitated the suspension of through running for two days. The Teesta Valley extension of that railway was also similarly affected. Heavy rainfall on the night of July 2 caused some of the newly-repaired railway embankments in the Mozuffarpur-Motihari section of the B. & N.W.R. to settle, and, as a precautionary measure, night running was suspended for four days; day trains continued to run at restricted speed. Earlier, a severe hurricane uprooted several trees and threw them on to a passenger train on the Allahabad-Jubbulpore section of the G.I.P.R. Several windows of the train were smashed and the track was blocked. The train was detained for over an hour while the line was cleared.

Railway Rates Conference

The revision of the existing elaborate railway rates machinery was recently referred to a committee of the Indian Railway Conference Association which had to consider, *inter alia*, (*a*) the number of classes there should be and the maximum and minimum rates for each class; (*b*) whether class rates should be on a telescopic basis and, if so, whether they should be levied on the local distance or on the through distance; (*c*) whether assimilation of the schedule rates on the various railways was practicable and, if so, whether the schedule rates should be applicable on the local distance or on the through distance; (*d*) whether terminal charges should be levied and, if so, whether they should be included in the class or schedule rates or be levied separately on a scale varying with the class, commodity or conditions of carriage; (*e*) whether distance charges should continue to be levied; (*f*) whether some degree of uniformity in transhipment charges was feasible; and (*g*) the difference between owner's risk and railway risk rates.

The preliminary report of the committee recommended that the Railway Board should call a representative meeting of trade, commercial and agricultural interests to confer with a committee of the I.R.C.A. A conference of this nature would enable the railway representatives to explain the present system of rating, and obtain from their *clientele* a definite statement of the directions in which that system, in their opinion, required simplification or revision. In accordance with this recommendation, the Railway Board has arranged for a conference of the representatives of the railways, the Associated Chambers of Commerce, the Federation of Indian Chambers of Commerce and the Imperial Council of Agricultural Research, to meet at Delhi on July 29 for a full discussion of the various issues connected with the simplification of rates. It is understood that Mr. A. V. Venables, Agent of the East Indian Railway, will preside over the meeting.

VICTORIA

Increased Locomotive Efficiency

As already mentioned in these columns, a very considerable speeding up of train services has recently been effected, but this is stated to be only a beginning of generally improved services throughout the system. The particular measures that have made acceleration possible are improvement in locomotive performance, in track, signalling, bridgework, workshops and sheds. Extensive research and experiment, closely following that in other countries, has shown the advisability of modifying locomotive front ends. A self-cleaning smokebox, reduction in height of blast pipe, and increase in the size of the blast pipe cap, together with enlarged chimney diameter, have combined to reduce back pressure in the cylinders and give greater power and efficiency in operation in passenger working. The " S " class Pacific locomotives are now fitted with smoke deflectors similar to those in use on the Southern Railway.

Combating Drifting Sand

The success of experiments in the Mallee District to combat the collection of sand in cuttings is likely to be of interest to maintenance engineers in many sandy countries. To prevent accumulation of drift sand a special type of wind chute fencing has been erected. It stands nine feet above formation level, slopes slightly away from the track, and into the prevailing wind, and the upper five feet are boarded in continuously so as to form a deflecting chute. The cutting slopes have been flattened. Striking the upper part of the fence, the wind is deflected downwards by the chute, which is inclined with the fence, and blows through the opening—left by the lower four feet of the fencing being unboarded—at an accelerated velocity, carrying the sand well clear of the track. This type of chute has been tested in, and is suitable for, cuttings of up to four feet in depth, and experiments are still continuing, to meet local varying conditions by altering the depth of the timber sheeting or width of the chute. Considerable saving in cost of operation by eliminating delays due to sand drifts has already been effected, and all experiments to date have been very encouraging.

QUEENSLAND

Daily Northern Train Service

At the end of May the first of three new trains for the Northern mail service between Brisbane and Cairns, a distance of 1,041 miles, was put into service, and a daily train between these cities was inaugurated. The new train is equipped on modern lines and should be popular with tourists.

Growth of Tourist Traffic

The growth of the tourist traffic in Queensland has been rapid since the Tourist Bureau was placed under the control of the Railway Department. An extensive publicity campaign has made more widely known the attractions of Queensland, particularly as a winter resort for residents of the Southern States. The Great Barrier Reef is increasing rapidly in favour with tourists, its attractions being unique.

Arbitration Court Proceedings

The Arbitration Court has been engaged for a considerable time in hearing the claims of railway unions for improvements in pay and conditions. The award has not yet been issued, but if only a proportion of the claims put forward are granted considerable additional expense to the Railway Department will be involved.

Buoyant Revenue

The revenue collected for the eleven months ended May 31 showed an increase of £833,749, compared with the figures for the corresponding period of the previous year, an advance of 15 per cent. This was due to a marked improvement in all classes of traffic, but a good deal of the excess was attributable to the heavy livestock and fodder traffic consequent upon the drought, which still prevails. As is usual when the livestock traffic is heavy, expenditure showed a large increase, being £488,233 (or 12 per cent.) greater than in 1933-34. Meat works are at high pressure in dealing with cattle in the effort to treat as many as possible before they go off in condition. The export of chilled meat to Great

Britain is gradually increasing in volume and will represent a large portion of the beef exports before very long.

MADAGASCAR

New Railway from Betsileo to the East Coast

The end of the present year is expected to see the completion of another of the schemes of French Colonial railway building which have been financed by special loans. This is the line from Fianarantsoa, capital of the rich Betsileo province, to the east coast at the new port of Manakara. Communication between these points has previously been by road, as resources were depleted by the construction of the Tananarive-Côte Est line, and funds have since been insufficient for a second railway. The disparity in cost between road and rail transport, however, held back the development of Betsileo, despite its fertility. In 1928 the rate per tonne-km. for goods conveyed by lorry was fr. 4, and fr. 3 by ox wagon, whereas exports from Tananarive were transported to the coast by train for 45 centimes per tonne-km. By that time the decision to build a railway had been taken, and active work was started in the same year.

Details of the New Line

The Fianarantsoa-Manakara line is 101 miles in length, and traverses more difficult country than that between the coast and Tananarive. Its maximum ascent on the journey to the interior is 2,794 ft. in 26 miles, compared with a climb of 2,638 ft. in 38½ miles by the earlier enterprise. The route involves 51 tunnels, totalling 3½ miles, a viaduct across the valley of the Ankeba 679 ft. long including approaches, and 138 ft. high, a rail and road viaduct 565 ft. long and 33 ft. high over the Matsiatra, and many other smaller works. Following the cyclone in January, 1934, it was decided to erect covered galleries to a total length of 919 ft. as a precaution against avalanches on an exposed part of the line.

On July 24, 1934, the initial 52 miles were opened between Manakara and Ambinany-Mananpatrana, whence motorcars are run to Ifanadiana on the main road, connecting there with existing road services to Fianarantsoa.

New Narrow Gauge Line to the West Coast

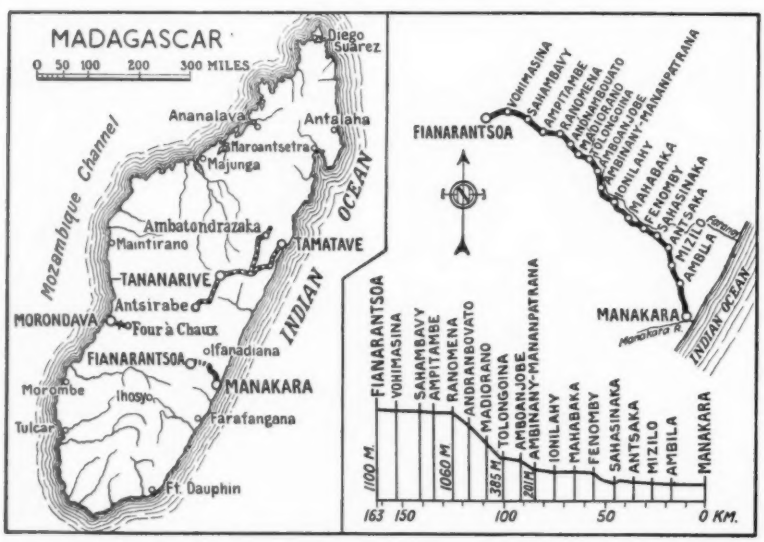
According to the French publication, *L'Entreprise Française*, the various works on the uncompleted section are sufficiently well advanced to justify anticipation of completion within the next six months. The eventual equipment of the line for electric traction is contemplated. The construction of a narrow gauge railway down the Morondava valley from Four à Chaux to the west coast is also in hand.

CZECHOSLOVAKIA

The State Railways in 1934

Of the 13,500 km. of railways in this country, 11,400 km. are State-owned. Due to a deficit of Kč.* 1,000 million in 1933 on State lines, legislation was passed last year subordinating road transport to railway interests, and, partly on this account but more to trade revival, the deficit fell by 20 per cent. to Kč. 800 million in 1934. The improvement was due to higher freight receipts of Kč. 101 million as against decreases in passenger and other receipts of Kč. 67½ million. The use of diesel-electric traction for local traffic has increased considerably of late years, standard units being supplied by local firms. Electrification is also proceeding, though not rapidly. The relatively backward parts of the State system in Slovakia are stated to have consumed Kč. 12,600 million during the past 15 years in improvement measures, according to the Department of Overseas Trade report, "Economic Conditions in Czechoslovakia," of April, 1935.

* The value of the Kč, or Czechoslovak crown, varied from Kč 197 in February, 1934, to Kč 115 in April, 1935, to the £1 gold.



Key plan, sketch map, and gradient profile of new Madagascar railway

Bridge Strengthening

The work of strengthening all main line bridges on the Rhodesia Railways up to a 20-ton axle load standard was completed a few years ago, and, but for the recent traffic depression, many bridges on the older branch lines would have been taken in hand. The West Nicholson branch is one of the earliest, and it has been decided to strengthen all bridges on this line during the next two years. Traffic on it has increased considerably of late, due largely to the gold mining activity and to the Liebig Company's new meat extract factory. The Bulawayo cement works also obtains a large quantity of limestone from a quarry on this branch. The bridges will be strengthened to carry the heaviest locomotives and rolling stock in service with a margin of overload to take 15-ton axle loads.

RHODESIA

Belgian Coke for the Congo

It is reported that two shipments of Belgian coke have recently been made to the Belgian Congo for use on the copper mines of the Union Minière du Haut Katanga. One shipment was to be conveyed by the all-Belgian rail and river route via Matadi and the other via Lobito Bay and carried inland over the Benguella Railway. Most of the coke consumed by the Congo copper mines has previously been supplied from Wankie, the Southern Rhodesian coalfield, and the Belgian experiment is being watched with interest by the Rhodesian railway and colliery companies.

Novel Railway "Hotel"

For the festivities at Lusaka in connection with the opening of the new capital of Northern Rhodesia on May 31, the Rhodesia Railways, at the request of the Government, arranged to provide accommodation in railway coaches for the influx of visitors. Ten coaches and three dining cars were stabled in a siding at Lusaka station, while grass-thatched lounges, bathrooms and lavatories were erected adjacent to the siding, all being illuminated by electric light from the town supply. This novel "hotel" housed about one hundred people, who were unable to obtain accommodation in the local hotels. In addition, several distinguished visitors occupied private saloons which were also stabled at the station.

RAILWAY MAINTENANCE PROBLEMS, VIII.—STATION BUILDINGS

By Lt.-Col. H. A. HULL, M.Inst.C.E., District Engineer, Northampton, L.N.W.R. and L.M.S.R., 1918-33

Notwithstanding all the knowledge now available in print some of the most essential and elementary facts are often ignored. There are always pioneers at work, on whose heels follow those with ingenious minds to record their results as formulæ for the future guidance of the unimaginative or timid.

ALL buildings are liable to have their timberwork attacked by the fungus *merulius lacrymans,* which causes wet rot and in turn develops into dry rot, and this in a short time reduces the timber to powder. Wet rot has a peculiar smell by which it can at once be recognised. The omission to deal thoroughly with this fungus involves heavy expenditure eventually, for dry rot spreads rapidly and extensively. It is no use simply patching up woodwork which has been attacked by dry rot, for the new woodwork is quickly infected and is itself destroyed. Half measures, such as coating the outside of walls which show interior signs of damp with paint or tar or other waterproofing material on the exposed outside surface, are seldom effective. The cause of the dampness should be traced to its real source.

The author always made a point of carefully investigating any attack which became apparent in buildings under his charge. Dampness was generally found to arise from the absence ot, or a defective, damp course, or an unsuspected leak in a roof or a rain water pipe. This, together with the absence of ventilation, and the warmth arising therefrom, was found to foster the growth of the fungus. A good method of introducing a damp course where none exists, or where the existing one is imperfect, is to cut out two courses of the brickwork for the thickness of the wall in short lengths in succession, inserting a layer of slates set in cement, with their joints overlapping, and then replacing the brickwork. It is important to see that earth is not heaped up against the walls of buildings above the damp course.

An extraordinary case of rot having been set up by the neglect of a small detail occurred in the writer's district some years ago. The station buildings at Nuneaton on the Trent Valley line were rebuilt shortly after the war, and a few years later it was discovered that the parquet flooring, dado wainscotting, and skirting in certain waiting rooms were rotting away. Fig. 1 illustrates the type of construction at the affected places. There was a damp course; the wood block flooring of well seasoned timber had been laid on hot pitch, which in turn rested on a substantial cement concrete bed, and over the wood blocks was a layer of paper felting and an oilcloth covering. The bent outlet of the outside rain water pipe was just level with a joint between precast concrete blocks of which the piers were constructed, and, although the platform was roofed over, the rain water from the down pipes was driven against the adjacent joint when the wind was in a certain direction. Through the joint the moisture travelled to the inside of the wall where, owing to the complete lack of ventilation, it failed to evaporate and the paper felting became like a wet sponge and radiated the moisture across the room and set up rotting. The outlet of the rain water down the pipes was lowered so as to preclude the possibility of the drips blowing against the joint, the decayed block flooring was taken up, and new blocks laid in hot pitch, without any paper felting or oilcloth on the top, leaving the plain and polished wooden surface exposed. The wainscotting and skirting were also replaced where necessary. The cure has been permanent.

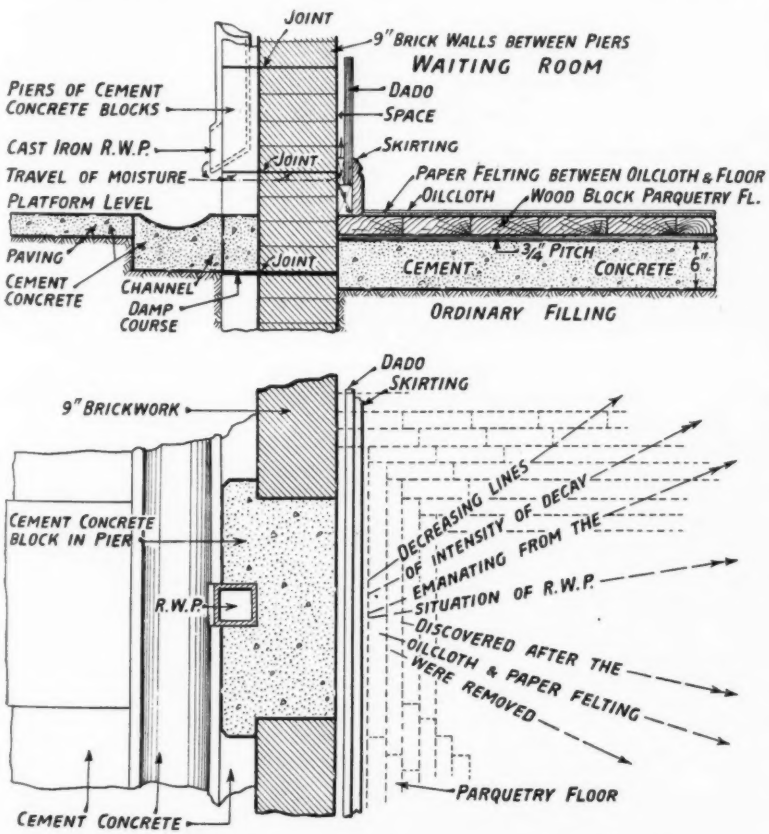


Fig. 1—A faulty detail that caused rotting of woodwork

At Rugby on the Trent Valley line the wooden flooring behind the bar in the refreshment room, which was covered with oilcloth, was subject to decay and frequent repair, the cause of the decay not having been diagnosed. There was no possibility of damp occurring underneath, for the flooring was laid on timber joists carried by a girder and concrete superstructure over the cellars beneath. When the writer took over the maintenance he found the whole timber floor was so rotten under the oilcloth that it had to be relaid throughout. Every time the floor was

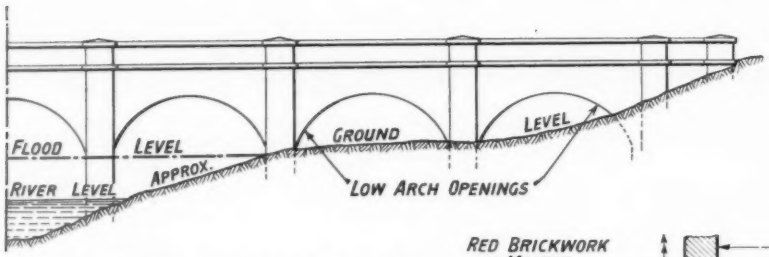


Fig. 2—Typical land arches of viaduct

washed, a daily occurrence, moisture from the washing was left at the joints in the oilcloth, and it was this which gave the fungus a hold. The remedy which proved effective consisted in arranging thorough ventilation under the floor between the boarded joists and the cement concrete on the top of the girder work.

Where tubs or boxes containing soil in which plants grow are added for decorative effect to stations with wooden platforms, these should be raised above the platforms to allow a current of air to circulate beneath them.

During the war the painting of station buildings, with the collateral examination before the painting was begun, was neglected, with the result that much decay occurred, and eventually, when renovation was required, heavy expense was necessitated in repair. In war time such neglect is unavoidable, but at other times it is false economy to save on painting.

It is a matter of common observation that the earth under the last low arches of a viaduct is absolutely dry at all seasons of the year, even in close proximity to a river (see Fig. 2). This is due to the current of air perpetually passing under the low arches, in whatever quarter the wind may be blowing, and even if there is no appreciable wind at all. The ground is dried as clothes dry which are hung out on a line in the open air after washing. When extending some office buildings over the sodden bank of a mill stream, the author, bearing in mind the above observations, arranged a cellar underneath them, as indicated in Fig. 3. Within two years the cellar portion was absolutely dry, so much so that it was possible to use it for the storage of papers, although no flooring was put down on the plain earth. The only means taken to bring about this result was a careful arrangement to assure adequate natural ventilation, pipes being inserted in the walls in such a position as to obtain the maximum advantage from the prevailing wind.

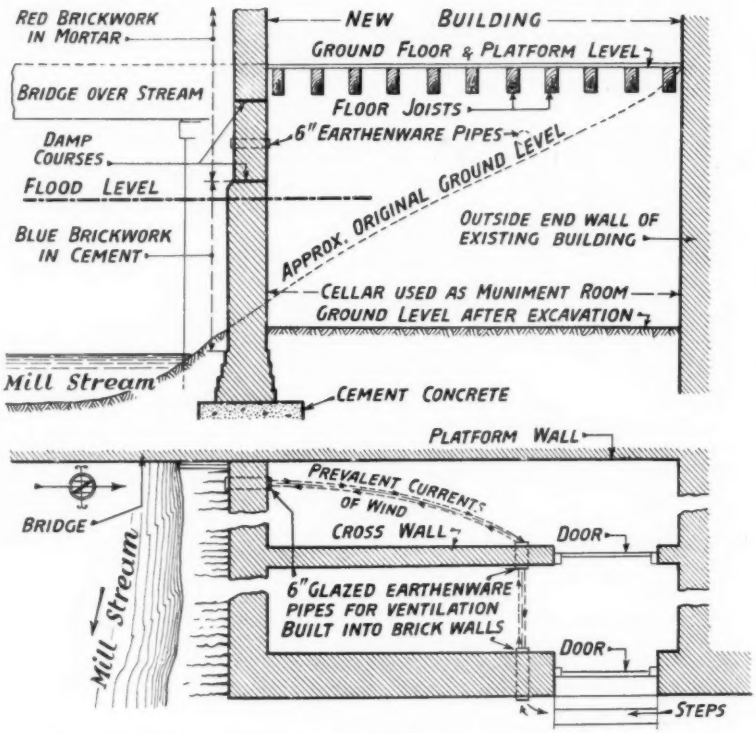
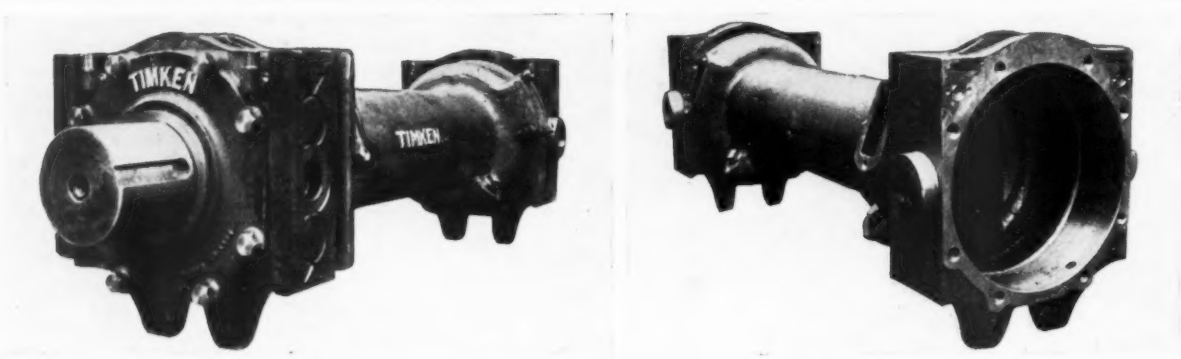


Fig. 3—Cellar adjacent to stream kept dry by ventilating on the principle of viaduct arches

(*We hope to publish the next article in this series in our issue dated September 6. Previous articles appeared in our January 18, February 15, March 15, April 12, May 10, June 7, and July 5 issues.*)



Timken cannon box type roller bearing assembly, similar to those of the new L.M.S.R. turbine locomotive described on pp. 197-198, as supplied to a Birmingham Railway Carriage and Wagon Company steam railcar for the Belgian National Railways

THE TRANSPORT OF FOOD BY RAIL*

II—Types of vehicles and methods of refrigeration used for the carriage of perishable foodstuffs

By Sir HAROLD HARTLEY, C.B.E., M.C., F.R.S., Vice-President, London Midland and Scottish Railway

A GREAT deal of work has been done by the Scientific Research Department of the L.M.S.R., in conjunction with the Carriage & Wagon Department, to determine the most economical type of construction for various purposes, and I should like to acknowledge here the constant help we have received from the three research stations at Cambridge, Aberdeen, and Ditton, and particularly from Dr. A. J. M. Smith, at each stage of the problem.

The standard type of insulated wagon has an 8-ton load capacity. The body framing is of oak and jarrah, sheeted inside and out with deal boards, the space of 3 in. between these being used for the insulating material. The roof is also double, with an insulating gap of 2 inches. The floors of the van are laid with Decolite or other composition over $1\frac{1}{4}$-in. boards, under which is a 1-in. layer of cork and a bottom sheeting of $\frac{3}{4}$-in. boards. It is important that there should be no leakage of warm air into the wagon when it is in motion, and great care is taken to make the doors airtight. Either cork or Alfol is used as insulating material. The latter consists of lightly crumpled sheets of polished aluminium, a number of which are placed in the air gap in the walls; by diminishing both radiation and convection they reduce the heat leakage and they have the advantage of lightness.

Experiments have been made to determine the reduction in heat leakage obtained by increasing the thickness of the insulation with Alfol, with the following results:—

Thickness of insulation in inches	Heat leakage in B.Th.U. per hour per degree of temperature difference
3	122
5	98
7	62

The amounts of refrigerant necessary to neutralise the heat leakage in each case, *e.g.*, 25 lb. of ice an hour with 3-in. insulation and a temperature difference of 30 degrees, give a measure of their relative economy, but since the transfer of heat to the actual load involves both its passage through the walls and then to the load, and is therefore affected by the insulation, by the stowage and character of the load, and by the motion of the van, it is not surprising that the results of experiments are misleading unless they are obtained for the conditions under which the load will be carried.

In the construction of the most recent type of insulated vehicles the heat leakage is diminished by reducing to a minimum the amount of through framing timber, separate pillars and rails being used to support the outer and inner sheeting; in addition, the steel bolts are countersunk and insulated with plastic wood. This is important since the conduction through a single 1-in. bolt is greater than that through a square foot of the normal insulation.

A number of different types of insulated containers have also been made which can be lifted from the wagon chassis on to lorries so that refrigerated transport may be available throughout a journey. These are built in sizes varying from 12 ft. to 14 ft. 7 in. by 6 ft. 8 in., with a load capacity of 4 tons. The general construction is similar to that of the wagon bodies using Alfol in a 2-in. space as an insulator. In addition one highly insulated container has been built with 6 in. of Alfol insulation all round as an experiment.

Methods of Cooling

Five different methods are used in different circumstances:—

(1) Pre-cooling before loading.
(2) Use of ice.
(3) Use of solid carbon dioxide.
(4) Use of eutectic inserts.
(5) Small mobile refrigerating plants.

Pre-cooling

This has great advantages as it is obviously more economical when possible to cool the food in a cold store with a refrigerating plant than to cool it during its journey, and it is used as much as possible. It will be seen later that in some cases no refrigerant is required on the journey if the insulation is sufficiently good. It has been found also that considerable advantage is obtained in low temperature conveyance by pre-cooling the vehicle. This is done by placing refrigerant in the van or container some time before the traffic is loaded. It is usually found that two hours' pre-cooling is sufficient.

Use of Ice

The oldest and still the most popular form of refrigeration is by means of ice which, with the growth of ice factories, has been made available in every important town. It is a cheap form of refrigeration when conditions permit of its use, and it has the advantage of not drying the commodity appreciably. In use, the ice is crushed and usually loaded into bunkers, which are rustless metal boxes placed inside the vehicle, so that the air is cooled by conduction and convection; no forced draught is used in this country. In the older types of vehicle the bunkers were placed on the end walls, but it was found that with this arrangement the air circulation was not satisfactory. The latest type of bunker designed for the new meat containers is a shallow metal box extending the whole length of the roof, so as to provide good circulation of the cooled air. The bunker is charged through three roof hatches fitted with well insulated airtight lids. A drain pipe is taken off above the level of the exposed portion of the bunker and a by-pass, provided with a stopcock, is taken from the lowest point of the bunker for complete drainage. When in use the stopcock is closed so that the bunker is filled with a water-ice mixture which makes the transfer of heat more rapid.

It has been found that the most efficient method of using ice is to place it in contact with the goods to be refrigerated. The application of this method is, however, limited to goods which are not damaged by a temperature of 32° F., or by contact with water.

Solid Carbon Dioxide

The manufacture of solid carbon dioxide on a commercial scale was first begun in this country in 1924, and it was not until 1930 that the first experimental appli-

* A paper presented to the Society of Chemical Industry annual meeting at Glasgow, on July 3.

cation to rail transport was made. By 1932 the use of this refrigerant on rail vehicles was established as a commercial practice. Since that time there has been a growing demand for solid carbon dioxide refrigeration and it has made possible the carriage of certain new classes of traffic. In developing its use we have had the advantage of the assistance of members of the staff of Imperial Chemical Industries Limited, and I am glad to have this opportunity of thanking them for their help.

Since solid carbon dioxide evaporates directly under atmospheric pressure at a temperature of −109° F., low temperatures can easily be obtained by means of it, and it is clean, leaves no residue, and is easily handled. An additional advantage is the "gas storage" effect, although rail journeys are usually so short that this is not important. Solid carbon dioxide compares favourably with ice as regards latent heat, for its refrigerating power is 275 B.Th.U. a lb. at 32° F., compared with a value of 144 B.Th.U. a lb. for ice. In addition, its density is 1·3 compared with a density of 0·91 for ice, and it thus occupies a smaller space than the equivalent amount of ice. Care has to be taken in using it to avoid direct contact with certain foods, notably milk and to a lesser extent soft fruit, as this may have deleterious effects.

Carbon dioxide is supplied in blocks which are placed in bunkers of somewhat different construction from those used for ice. They consist of a box, insulated on five sides, one of which is provided with a door for loading. The sixth side is made of an aluminium plate which supports the refrigerant. The factors determining the rate of evaporation are the area of contact of the solid carbon dioxide and the area of the evaporator plate; the thickness of the latter cannot matter much as it is quickly covered by a layer of frost, the thickness of which must control the flow of heat.

Eutectic Inserts

The use of eutectic mixtures as refrigerators is really the converse of the old-fashioned railway foot warmers which were filled not with hot water but with the trihydrate of sodium acetate which melts a 58° C. with a large absorption of heat. On British railways eutectics have been made up in the form of inserts for use with cans of cream, travelling in guards' vans. The insert is made from galvanised sheet iron pressed into a cylinder and fitted with a lip so that it can be placed inside the neck of the cream can. Its depth is chosen so to leave a 1-in. clearance between the surface of the cream and the insert. The eutectic solution used consists of a solution of sodium and ammonium citrates in water which has a freezing point of 25°F. and a latent heat of 125 B.Th.U. per lb. Before use the eutectic is frozen in the hardening room of the dairy for 24 hours. It provides enough refrigeration to maintain a can of cream at a temperature of 34°F. for an overnight summer journey of 16 hours.

The more extended use of eutectic mixtures seems to have possibilities, as by taking different salts or mixtures a large range of eutectic temperatures down to −40° F. is available if necessary to meet various purposes. And this method is specially adaptable for use with small consignments such as single cans of cream on passenger trains.

It would, however, require the provision of special freezing equipment such as that for an ice-cream hardening room, which works at a temperature of 5°F., and there is the usual difficulty of standardisation, as in the case of cream a number of differently sized inserts are required to deal with the various types of containers. But in view of its advantages, the use of eutectics justifies careful examination.

Mobile Refrigerating Plant

Mechanically refrigerated vans have certain advantages as they are independent of outside supplies of refrigerant, and for some purposes they are essential, but they involve additional weight, loss of space and increased cost of installation and maintenance. They can, therefore, be used to the greatest advantage if they have a high capacity. Two types have been developed and are in service abroad, one driven from the axle of the moving vehicle and the other by a small diesel engine.

The Rhodesia Railways has vans fitted with a methyl chloride compression plant driven electrically from a generator geared to the axle. The evaporator coils are mounted in a glycerine-water buffer solution in an insulated chamber at one end of the van, thus providing storage for cold. Air circulated through the van by means of an electric fan is drawn from floor level, cooled by contact with the glycerine-water cold storage, and delivered at roof level in order to cool the load as it sinks by convection. Temperature control is obtained thermostatically; when the desired van temperature is reached shutters are opened and the air is passed direct from floor level to the fan without coming into contact with the cooling apparatus. Provision is made for operating the compressor, whilst standing at a station or depot, by connecting it to any available source of power.

In the diesel-driven unit the power is supplied by a 9-h.p. engine automatically controlled and the correct temperature is maintained by a thermostatically-operated clutch which disengages the compressor from the engine when the desired temperature is reached. Provision is also made for an electrical heater for use when the outside temperature is lower than the required inside temperature. The chief advantage of a diesel-driven machine is that the operation of the cooling plant is independent of the motion of the train. Against this must be set the greater weight and the higher initial cost and maintenance charges. An example of the class of service for which this type of unit has been utilized is the traffic in grapes from Mendoza to Buenos Aires. The transit takes 3 to 3½ days at temperatures ranging from 60°F. to over 90°F. On test it was found that the temperature of a full load of freshly-picked grapes was reduced from 80°F. to 40°F. during the journey.

(*To be continued*)

The Swansea and Mumbles Railway

Mr. H. C. M. Daniell, presiding at the annual meeting of the Mumbles Railway and Pier Company on Saturday last, made reference to the Bill recently promoted by the South Wales Transport Co. Ltd., the lessee company of the railway, to abandon the Swansea tramways and also to discontinue wholly or in part the train service to Mumbles. He said that, while their opposition to the Bill was successful, the costs incurred were not recoverable against the promoters and would have to be borne by the Mumbles Railway and Pier Company. The costs would amount to about £900, but would not affect the present accounts. The auditors, he added, advised that these costs should be provided out of income, and this would necessitate a reduction in the rate of dividend from 7½ to 6 per cent. for the current year.

The railway between Swansea and Mumbles is owned by two companies, the northern part by the Swansea & Mumbles Railways Limited, and the southern part by the Mumbles Railway & Pier Company. The whole line —5¾ miles—is leased by the South Wales Transport Co. Ltd. As the original section was opened in 1807 this ranks as one of the earliest railways in the world.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

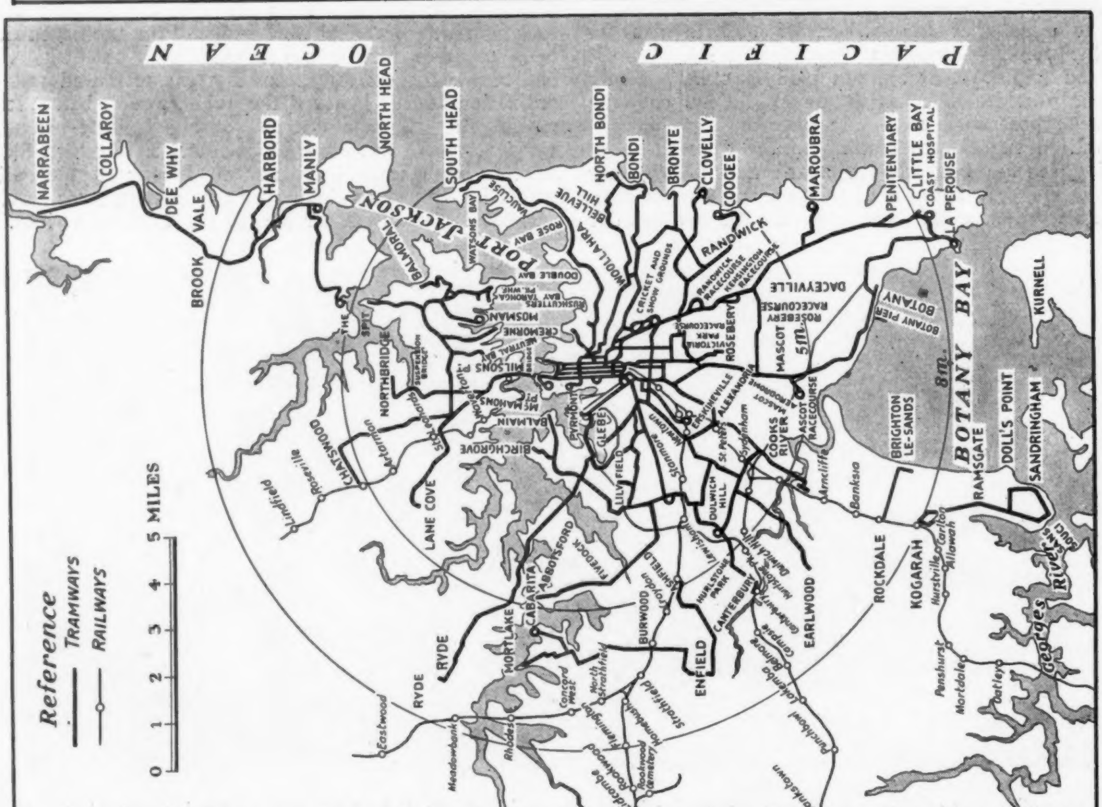
Road and Rail in Northern Ireland

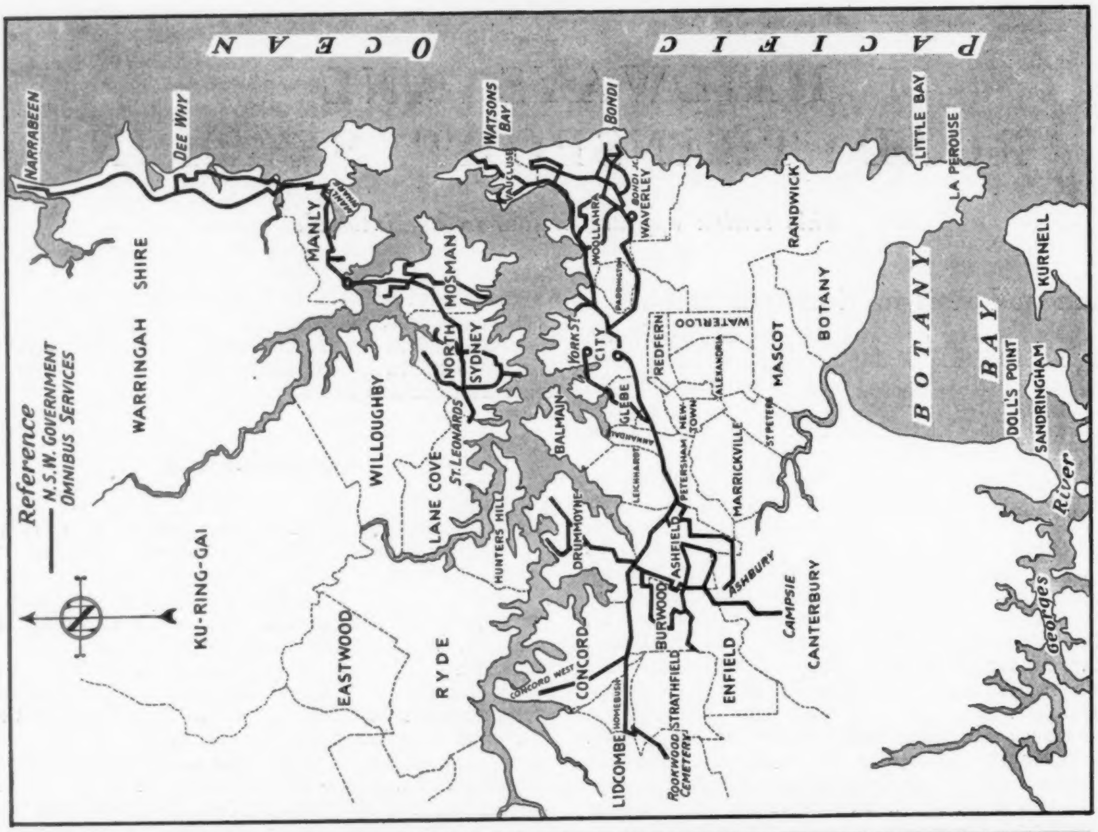
AS recorded in THE RAILWAY GAZETTE of July 17, the Road and Railway Transport Bill (Northern Ireland) received the Royal Assent on July 16, after a smooth passage through both houses of the Northern Ireland Parliament. It is true to say that in its essentials it suffered very little alteration from first to last, and the summary given in our issue of May 1 still indicates its main purpose and provisions. There were two new clauses added, one legislating for the issue of licences to local carriers in Belfast and Londonderry, who are not to be taken over by the Road Transport Board when it is set up, and the other designed for the protection of the tramway and bus undertakings of the Belfast Corporation, which are also excluded from the control of the board. The provisions regarding the partial exemption of farmers' vehicles have been amplified and made clearer, and among the exempted vehicles are now included those used for the conveyance of whole milk, cream or skim milk. Among minor provisions are those which extend the qualifications for chairman of the Arbitration and Employment tribunals to include a solicitor of not less than ten years' standing. There is an alteration in wording which makes it clear that the owners of undertakings for which the purchase price does not exceed £5,000 shall be entitled to have that amount paid in cash. A new sub-clause provides that the section of the Act covering its main purpose shall come into force on September 1, 1935, and in the clauses relating to the drawing-up of a pooling scheme between the board and the railway companies it is now stated that such pooling scheme shall come into force on a date, not later than 12 months after the passing of the Act, to be appointed by the Ministry of Home Affairs. The fact that the measure has been so little changed in its progress from a Bill to an Act is a tribute to the soundness of the Report by Sir Felix Pole upon which it was based.

Co-ordination

WHILE there are in Great Britain only a few areas where transport might be operated to advantage under an organisation such as the London Passenger Transport Board, there are many where joint committees of municipalities, or of municipalities and railway or other companies, could do useful work in co-ordinating local transport, was the conclusion reached in a paper contributed by Alderman A. H. Gledhill, J.P., Chairman of the Halifax Corporation Tramways and Motors Committee, to the annual conference of the Municipal Tramways and Transport Association at Douglas, recently. Practically every joint scheme, including the L.P.T.B. and the joint committees between the municipal authorities and the railways at Halifax, Huddersfield, Sheffield, and Todmorden, was outlined; delegates from many of the districts where such committees were at work spoke of the excellent results being secured. One of the speakers said that in his view one of the biggest things coming was road and rail co-ordination and he believed the public would, before long, be able to make an outward journey by one means of transport and come back by another, on a return ticket. Another speaker said he was in favour of unification which he defined as linking up the long distance services and leaving the local services to the local authorities.

One of a fleet of oil-engined 4-ton Albion lorries in the service of the L.M.S.R., this particular one being engaged in the transport of stone from a quarry. The unladen weight of the vehicle is well under 4 tons





Sydney's transport problem. Sketch maps, to the same scale, showing the routes of the tramways and motorbuses which are Government owned and controlled by the Commissioner for Road Transport and Tramways

Sydney's Transport System

Under the energetic administration of the Road Transport Commissioner, backed by a far-seeing Minister of Transport, the modernisation of Sydney transport is proceeding rapidly—improved trams and electric trolleybuses are taking the place of obsolete rolling stock, and the most modern type double-deck buses are continually being placed in service

By A. W. ARTHURTON, formerly Secretary, British Railways Press Bureau

SYDNEY, the capital of New South Wales, is the largest and most important city in the Australian Commonwealth. Including the suburbs, it has an area of 100,000 acres, 135 miles of streets and a population of over one million.

The tramways of Sydney are Government-owned and controlled by the Commissioner for Road Transport and Tramways. In a talk with the Commissioner, Mr. S. A. Maddocks, I gathered that he is far from the opinion that tramways are obsolete, but thinks that they require to be supplemented to an ever-increasing extent by trackless trolley and motorbuses. He is anxious to accelerate the modernisation of Sydney's transport system and has in view a comprehensive plan for the improvement of passenger transportation, under which £1,000,000 will be spent in converting obsolete stock and providing modern vehicles. The plan has been examined by the Cabinet, which has referred it to the Treasury officials for examination and report. It provides for the construction of at least 200 electric trolleycars. The 200 new "R" type corridor tramcars, ordered by the N.S.W. Government as an unemployment relief work, which are being added to the rolling stock, will considerably improve the tramway position, but it is considered that there will still be much room for improvement. The new type cars embrace the latest developments in tramcar construction. They compare very favourably with the highest standard in tramway rolling stock in use in other parts of the world and have received the unqualified approval of the public.

In all the cities I visited across three continents the problem of the tramway was insistent. Not only in Montreal, Sydney, and Auckland, but in New York, Chicago, and San Francisco the question of replacing the noisy tramcar in narrow city streets is one which will have to be faced in the near future. The fact that trams still remain, in all the great cities of the world, the most economical method of transporting masses of people efficiently and at the cheapest possible fares only adds to the difficulty of the problem. In the comparatively narrow streets of Sydney the noise and obstruction caused by the trams are very great, and it is small wonder that the Road Transport Commissioner has determined to remedy this. Trolleybuses will doubtless eventually replace trams on suburban routes, but it is in the main city streets that relief from noise and congestion is most necessary. Despite their bulk, trolleybuses are considered to be the most silent of all road vehicles. Running on low-pressure pneumatic tyres and taking their power from overhead wires, the only sound they create is the whirr of the motors when accelerating rapidly under heavy load. The experiment carried out with the two single-deck electric trolleybuses lent to the department by the A.E.C. (Aust.) Proprietary Limited demonstrated conclusively that this type of vehicle possesses many advantages, among which silence, smooth running and flexibility of movement are pronounced, but the trolleybus, like the petrol bus, compares unfavourably with the tram in regard to head room and crush loading in heavy traffic areas. A double-deck trolleybus ("Q" type)

Three types of improved rolling stock in use on Sydney's metropolitan transport system. Left to right, a corridor type tramcar, an A.E.C. 73-seater six-wheeled bus, and a trolleybus

was acquired on loan also from the A.E.C. concern and placed in service experimentally last year.

The building of the Harbour Bridge, opened in March, 1932, has had a great influence on Sydney's transport system. Formerly transport between Sydney and the populous north side of the harbour was carried on entirely by ferry boats which landed their passengers at Circular Quay, whence they were conveyed by trams to the city. Circular Quay is still the waterside terminus of the tramway system and thousands of dwellers in the outer suburbs situated around the spacious harbour arrive and depart by ferry boat, but the Harbour Bridge has diverted much of the traffic, and most of the inhabitants of the northern suburbs now travel over it.

The Harbour Bridge, that remarkable piece of engineering that dominates Sydney, from practically every part of which it can be seen, besides being the largest and heaviest arch bridge is also the widest bridge of any kind in existence—being 160 ft. in width. That is, 31 ft. 6 in. wider than the suspension bridge over the Delaware River in Philadelphia, U.S.A., and it carries four electric railway lines, two of which are used by trams, a 57-ft. roadway for six lines of vehicles, and an overhanging footway on each side 10 ft. wide. The maximum hourly capacity is 128 electric trains and trams, 6,000 road vehicles in each direction and 40,000 pedestrians. I was never tired of watching the traffic cross the bridge and, my hotel being close by, I spent quite a lot of time doing so, particularly in the evening when the lights of the bridge and of the shipping along the magnificent harbour, as well as those of the city and the far-reaching suburbs made it appear, from the vantage point of this huge structure, a veritable fairyland.

The electric train services of Sydney have been described in a previous article. A purely city tram service is maintained between Circular Quay and Central Railway Station via Pitt Street to the station and returning via Castlereagh Street, both of which are one-way streets. A frequent service of trams is also maintained to the eastern, northern, western, southern and south-western suburbs and to the Watson Bay line. The services for the northern suburbs start from Wynyard (underground) station and run across the Harbour Bridge.

Over £7,500,000 is invested in the Metropolitan Tramways and the net profit for the year ended June 30, 1934, was £58,745. The number of passengers carried during the same year was 277,345,142, an increase of 609,413 over the previous year. The 200 new "R" type cars now being added to the tramway rolling stock will involve the addition of over £600,000 to the capital indebtedness of the tramways.

Twenty-two motorbus services are operated by the Road Transport Department and for the year ended June 30, 1934, showed a net profit of over £5,000. The financial results of the year's operations provide ample evidence of the ability of the department to conduct efficient motorbus services in the public interest. Having regard to the age and condition of the second-hand buses purchased from private operators at the inception of the departmental services, liberal depreciation was written off these assets, and the policy of the department is to replace these vehicles with up-to-date rolling stock as early as possible. During the year under notice three of the most modern double-deck buses (Leyland and A.E.C. "Q" type) were placed in service, and quotations were accepted for the supply of sixteen additional double-deck chassis, four of which were to be fitted with compression ignition engines. The bodies of these vehicles were constructed locally and all have since been put into commission.

There are also 140 privately-operated motorbus services authorised by the Road Transport Commissioner, comprising 288 buses and run by 105 private operators, but during the year ten privately-operated bus services were merged in the departmental bus system. The revenue in excess of expenditure of the private operators was £4,361 and the number of passengers carried was 24,369,270, a decrease of 4,635,256 passengers compared with the previous year, accounted for by the merger just mentioned.

Sydney people are fortunate in having a large number of excellent surfing beaches within easy reach, both north and south of the harbour as well as within the harbour itself, where there are several shark-proof beaches. These popular resorts can all be reached in a very short time by tram, and crowds of bathers, young and old,

A view of the Sydney Harbour bridge showing the tram, road, and rail tracks at Milson's Point station

flock to the beaches at Bondi, Bronté, Clovelly, Coogee, Maroubra, Manly, Palm Beach and elsewhere, every evening and whenever opportunity offers.

The ferry-boat services from Circular Quay provide cheap and frequent services to all points in the harbour, both above and below the bridge. Manly, for instance, has a service every 20 minutes, or half an hour, and more frequent boats in the rush hours and at holiday times. The Port Jackson & Manly Steamship Company, with its sister ships, *Dee Why* and *Curl Curl,* oil or coal burners, which have a gross tonnage of 800 and a speed of 17½ knots (as well as other boats), has done a great deal to develop Manly as a popular bathing resort. I learnt from Mr. Howie, the energetic Chairman of the company, who is a large building contractor in Sydney as well as an Alderman of the city and a State Senator, that the company has spent a great deal of money in making Manly one of the safest and most popular bathing resorts in New South Wales. In addition to providing a cheap and speedy ferry service from Sydney it has erected a shark-proof fence along the beach and provided diving boards, rafts and all kinds of aquatic sports apparatus in the free Wonder Pool, as well as a dressing pavilion, West End cafe and tea rooms. The fares by the steamers are very cheap. The distance is 7 miles and the fares are: adults 6d., children 1d. (under 5 years free). Season tickets are even cheaper and the company claims to furnish the cheapest and safest travelling in Australia. Certainly it is the only instance I have come across where women are charged less than men. A man's yearly ticket, for example, costs £7 10s. whereas a woman pays only £5 10s., while for a weekly ticket it is 4s. for a man and 3s. for a woman.

I have dealt with the ferry services at length as they are a most important section of Sydney's transport facilities, and were still more so before the building of the Harbour Bridge. On the whole, the transport services of Sydney are efficient and cheap and the schemes that are now in hand for modernising the trams and buses will render them even more up-to-date.

Grain Carrying in Argentina

In the annual report of the Buenos Ayres & Pacific Railway published towards the end of last year it was indicated that the production of maize was showing a considerable increase. It was, in fact, on that account that the railway some months ago organised a new road service. The vehicles chosen for the purpose were some of the six cylinder, petrol-engined, Thornycroft Amazon type rough-track six-wheelers of which the company owns a considerable number and which its Road Transport Department utilises in various ways. The two photographs reproduced on this page show the new grain carrying services in operation. Actually, each vehicle carries 120 bags of grain (chiefly maize) and hauls a trailer loaded with 80 bags. We gather that contracts for large loads are made with the grain dealers who purchase the corn in considerable quantities in the growing districts and subsequently the grain is transported by road to Buenos Aires.

The chassis in question—the Thornycroft Amazon 6-7 ton rough-track type—is one that has shown itself to be particularly suitable for service not only in South America but in South Africa and other overseas countries where the roads are not always of the best type. Briefly, it has a six-cylinder petrol engine of 7,723 c.c. with overhead valves, which will develop close on 100 h.p. at maximum revolutions. The transmission system includes a single plate dry clutch, with a main four speed gearbox and an auxiliary gearbox which enables eight forward and two reverse speeds to be obtained. The driving axles are of the full-floating type and the scheme of suspension is a patented feature designed to give even distribution of weight under all conditions, irrespective of the relative movements of the axles, and so obtaining equal driving results from each wheel. The suspension is designed to permit of 9 in. difference in driving axle levels and also to allow either axle to tilt to an angle of 13 degrees without causing any distortion of the springs.

Powerful vacuum servo brakes are provided and the standard tyre equipment is 10·50 in.-20 in. low pressure type, to ensure the maximum road adhesion. The overall wheelbase (from the front axle to the rearmost rear axle) is 16 ft. 6 in. which enables a body space, including driver's cab, of 18 ft. 10 in. to be arranged for.

Two views showing a new service organised by the Buenos Ayres and Pacific Railway for the carriage of grain. The vehicles are six-cylinder, petrol-engined Thornycroft Amazon rough-track six-wheelers. Each lorry can be loaded with 120 bags of grain while the trailer takes a further 80 bags

Road and Rail in Ceylon

In the 1934 annual report of the Registrar of Motor Cars, Ceylon, it is suggested that there are three ways of dealing with the problem of co-ordination of road and rail transport. They are set out as follow:—(1) A complete monopolisation of both forms of transport in a single organisation. Government already controls the railway. It could acquire all private bus organisations and co-ordinate rail and bus services adjusting fares and time-tables to suit public convenience. It could also run a feeder service. This would eliminate competition but might raise the cost of road service generally; (2) Government might permit only so many vehicles to operate on the road as it considered necessary for public use, allowing a certain amount of competition to ensure efficiency but fixing standard rates to which private organisations must conform; and (3) Government might grant a monopoly to certain companies to run the necessary road service vehicles.

It has been reported that an expert from England is being invited to visit the island to examine and report on the whole question.

From Road to Rail

In view of the tendency to develop road services to take the place of rail services where the traffic is light, it is interesting to hear of the success achieved by the St. Louis Southwestern railroad in converting road buses to work on rails. One coach was converted experimentally two or three years ago by the fitting of four-wheel driving axles made by the Four-Wheel Drive Company. It worked well and two larger coaches were converted and fitted with lavatory accommodation, sand boxes, and so on to meet railway requirements. There are seats for 27 passengers. At first the converted vehicles were worked on the rails with the usual highway springs but they were not satisfactory and a new suspension had to be designed to eliminate rough riding. The buses work between Texarkana, Texas and Pine Bluff, Ark., a distance of 151·7 miles; they have an available speed of 64 m.p.h. forward and an unusually high reverse gear enables speeds of 60 m.p.h. in reverse to be reached.

Interesting Karrier Vehicles

Hitherto the unique Road-Railer vehicles produced by the Karrier concern have been associated with railway work in some way or another, for the carriage of goods or passengers or as service vehicles engaged on permanent way maintenance. Two have recently been ordered by the Liverpool Corporation to be fitted up as tower wagons, so as to be capable of being operated over any section of the extensive tramway tracks, irrespective of whether the lines are laid in the roadway or on sleepers. Thus they will enable all overhead wire equipment on any part of the Corporation's system to be efficiently maintained. The Liverpool Corporation has ordered, as well, a 4-ton Karrier chassis which is to be fitted with special gear for pole erecting purposes. The Leeds Corporation has ordered for its tramways department a Cob and a cable drum trailer. Another interesting Karrier Cob has been fitted with a four seated cab so that it may carry a working crew.

New Vehicles in May

Figures issued by the Ministry of Transport show that while the total number of mechanically-propelled road vehicles registered for the first time in May, 1935, was 37,733, compared with 35,051 in May, 1934, the number of goods vehicles showed a reduction, being 5,459 for the month as compared with 5,727 in May, 1934. The number of private cars showed an increase at 24,960 of 2,730, while at 1,004 the hackney vehicles were 138 ahead of the figures for the corresponding month in 1934.

New Insulated Containers for L.M.S.R.

Recently built at its Earlestown works, the L.M.S.R. has put into service twenty covered containers known as the "F.R." type, which are insulated and constructed for meat or fruit traffic. They are constructed of timber throughout, insulated with Alfol, and fitted with two bunkers in the roof to contain solid CO_2 as a refrigerant. The loose wooden floor grids and frames can be used for packing fruit baskets in the fruit season with a minimum of damage to contents, while at other times the loose fittings are taken out, and galvanised meat hooks are fitted to the rails, which remain permanently in the roof of the container. The main structural members are of the Australian hardwoods, jarrah or karri; the subsidiary members being of deal; everything possible is done to minimise weight. The outer sheeting is of deal boards, and the inner lining of plywood, between which are placed sheets of Alfol. The double roof and floor are similarly insulated.

The containers have double-hinged side and end doors, the latter at one end only. These are rendered airtight by spring-loaded leather sealing strips along the edges.

The solid CO_2 bunkers are arranged for roof loading, and are themselves insulated on all faces except the base, on which are fixed large aluminium cold distribution plates. The whole is carried on a steel underframe.

These insulated meat and fruit containers have been designed by Mr. W. A. Stanier, Chief Mechanical Engineer, L.M.S.R., to whom we are indebted for this description and illustration.

One of the new L.M.S.R. insulated containers to carry 4 tons of fruit or meat

THE L.M.S.R. TURBINE LOCOMOTIVE

Details of the roller bearing axleboxes

AS stated in the article on pages 1251-1260 of THE RAILWAY GAZETTE for June 28, the turbine express locomotive completed at the Crewe works of the L.M.S.R. in June last is fitted with roller bearing axleboxes throughout, and this is the first time in the history of British railways that a locomotive has been fully equipped with anti-friction bearings on all axles. Twelve single-row and eight two-row bearings of Timken manufacture are used to carry the complete locomotive and tender, which has a weight of nearly 164 tons. Four different types of axlebox have been incorporated, each designed to meet the individual conditions imposed by its position.

Both axles of the leading bogie are carried in the Timken type of cannon box mounting having at each end a single-row taper roller bearing of 13⅝ in. outside diameter, to carry a wheel load of 9 tons 12 cwt. The single bearing has been adopted as providing the maximum thrust load capacity, so desirable in this position. The radial load is divided between the two bearings. The bearings run in an oil bath, and advantage has been taken of the centrifugal pumping action of the tapered construction to provide an automatic oil circulatory system through the bearings. Cored passages are arranged in the lower half of the boxes for this purpose. The enclosures at each end of the axleboxes incorporate an oil flinger and oil grooves, which prevent the escape of oil and the penetration of dirt and water. Oil wastage is small and replenishment infrequent.

The axlebox is of cast steel, split on the horizontal centre line and secured with fitted bolts. The design facilitates inspection of the bearings, although this is necessary only after long intervals.

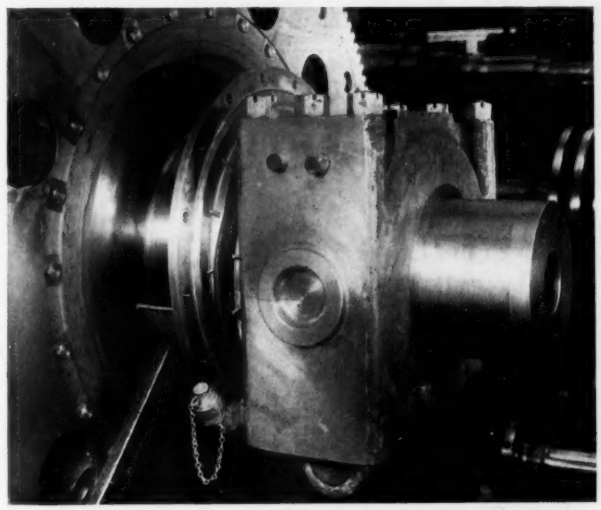
Driving Axle Bearings

This application called for special care and consideration owing to the flexible drive in the centre of the axle, combined with a heavy load of 22 tons 13 cwt. at rail. Two boxes are employed on an axle, each equipped with a self-contained double-row Timken bearing of 19 in. outside diameter. The bearings are mounted indirectly, that is with the small ends of the tapered rollers pointing towards one another, which ensures the maximum stability. The boxes are of cast steel, and are split horizontally on the centre line. The halves are secured by six long bolts of high tensile steel, which carry the journal load. The bearings run in an oil bath, the box having ample oil capacity; automatic oil circulation, as previously described, is provided.

The Timken patented trunnion horn guide, of special alloy steel, mounted on circular trunnions solid with the boxes, has been adopted. The flexibility allowed by this construction makes for smoother working and reduced wear. The horn guides are lubricated on all wearing surfaces from a felt plug recessed into the top of the horn guide, which is fed with oil by a wick trimming, from oil pockets cast on the top of the axlebox.

The horn guide proper is a separate component rotatably mounted on a circular trunnion on the box, and any tilting motion of the axlebox relative to the guide members on the frame, due to track irregularities, &c., is readily accommodated by a slight angular movement of the horn guide. This arrangement permits much greater flexibility and at the same time no portion of the structure is subject to undue stress or wear.

To ensure complete lubrication of all wearing surfaces, an oil reservoir fitted with a cover plate is provided on the top of the axlebox and a circular felt pad projecting through the trunnion guide to its face is let into the wall



Complete axlebox and bearing assembled on driving axle of L.M.S.R. 4-6-2 turbine locomotive

of the reservoir, and is fed with oil by means of a wick trimming. The angular movement between axlebox and horn guide, previously mentioned, tends to shear the felt pad slightly. This squeezes out the lubricant drawn from the reservoir, which then runs down between the trunnion guide and adjacent faces to lubricate thoroughly all wearing surfaces.

The boxes for the intermediate and trailing coupled axles are of the cannon box type, of a design generally similar to those of the leading bogie, but with the addition of the trunnion type horn guides as fitted to the driving axleboxes. Single-row Timken bearings of 19 in. outside diameter are used to carry the heavy axle load of 24 tons. The single axle of the trailing truck (Bissel type) is mounted in two boxes, each containing two single-row bearings of 13¼ in. outside diameter to carry an axle load of 18 tons 3 cwt. The indirect bearing arrangement is used; the axlebox is a single casting, closed by a cover at each end. Owing to the proximity to the firebox, special provision is made for the exclusion of ashes and water.

The tender is of the six-wheeled type, weighing fully loaded 54 tons 13 cwt. The Timken bearings in each of the six axleboxes are of the double-row type having an outside diameter of 12⅛ in. with direct mounting, *i.e.*, the small ends of the taper rollers point away from each other. The axleboxes are single steel castings, provided with outer covers and the automatic oil-circulatory system; the design is generally similar to that usually adopted for passenger coaches.

These bearings minimise the pounding of reciprocating

parts by supporting the axle round the whole of the circumference with only a fine radial clearance.

The illustration shows a driving axlebox on the L.M.S.R. turbine locomotive, and we show at the foot of page 188 a similar assembly in complete form for a steam railcar built by the Birmingham Railway Carriage & Wagon Company for service on the Belgian National Railways.

A LARGE WAGON TIPPLER FOR CHINA

Capable of handling 40-ton wagons at the rate of 20 an hour

AT the Fraser & Chalmers' Engineering Works of the General Electric Co. Ltd. a special form of the Marshall wagon tippler, for use on the Lunghai Railway, China, has just been completed, as announced on page 162 of our issue of July 26. This tippler, which is seen in the accompanying illustrations, is designed to handle wagons having a maximum capacity of 40 tons, and as the wagon itself weighs about 18 tons the tippler is rated nominally as a 60-ton machine, in that it has been designed to cope with a gross weight of 60 tons.

The 60-ton Fraser & Chalmers' Marshall wagon tippler in operation

The tippler is required to handle either 40-ton capacity trucks at the rate of 10 trucks per hour or (as will be the usual case) 20-ton trucks at the rate of 20 trucks per hour; if required, however, 40-ton trucks can readily be tipped at the rate of 20 per hour, making the total capacity 800 tons an hour. The 20-ton capacity trucks measure 29 ft. 6 in. long over body with a tare weight of 10 tons, while the 40-ton capacity trucks are 42 ft. 8 in. long, and have a tare weight of 18 tons. The machine is also constructed to tip 10-ton trucks, and is designed to handle lightly-constructed wagons without straining the bodies. In this type of tippler the wagon is clamped on to a platform pivoted at the front of the tippler to the main framework, and the wagon and platform are revolved about the pivot point by means of hoisting ropes and winches, assisted by suitably arranged balance weights, which serve to counteract excess movements and retain the clamping gear in position at all points of the revolution during the cycle of operations. The speed of tipping is regulated by a special voltage control system working in conjunction with a 75-h.p. d.c. Witton motor, which receives its supply from an a.c.-d.c. motor generator set. The whole of the electrical gear, including the motor generator set, was manufactured by the General Electric Co. Ltd. at its Witton works. At a demonstration given at Erith on July 25 the excellent arrangement of the sprung platform for taking the weight of the wagon side in tipping, was remarked upon and the smoothness and ease of the whole operation of raising and lowering the wagons was readily apparent.

RAILWAY NEWS SECTION

PERSONAL

Sir Henry P. Burt, K.C.I.E., C.B.E., whose retirement from the chairmanship of the Bengal & North-Western Railway—after occupying that position for 16 years—was announced in our issue of July 5, was at one time President of the Indian Railway Board. He is still Chairman of both the Rohilkund & Kumaon and of the Bengal Dooars, and a Director of the Bombay Baroda & Central India and Bengal & North-Western Railways. Sir Henry was born in 1857, and educated at Clifton College and the Royal Indian Engineering College, Coopers Hill. In 1878 he was appointed by the Secretary of State to be an Assistant Engineer in the Railway Branch of the Indian Public Works Department, and, after a year's practical training on the London & North Western Railway, he proceeded to India. Following upon extensive and varied experience on several Indian systems, he became successively, Manager of the Oudh & Rohilkhand, Eastern Bengal and North-Western (State) Railways. In 1905 Sir Henry officiated as Under-Secretary to the Government of India in that year was also deputed to attend the International Railway Congress in Washington: he was elected President of the Indian Railway Conference Association in 1910. Four years later he was appointed President of the Railway Board and became a Member of the Viceroy and Governor General's Legislative Council. In 1915 Sir Henry returned from India and was appointed Government Director of Indian Railway Companies at the India Office, a post he held until 1919. It was in that year that he became Chairman of the B. & N.W. and of the Rohilkund & Kumaon Railway Companies, and he was elected to the chair of the Bengal Dooars Railway in 1930; he was, moreover, Chairman of the Delhi-Umballa-Kalka Railway prior to its being taken over by the Government. He was created K.C.I.E. in 1911, and C.B.E. in 1918. During the war he represented the Secretary of State for India on the Priority Committee of the Ministry of Munitions.

Sir Henry P. Burt, K.C.I.E., C.B.E.,
Chairman of the Bengal & North-Western Railway, 1919–35

Lt.-Col. Thomas Gracey, R.E. (retired),
Elected Chairman of the Bengal & North Western Railway

Lt.-Col. Thomas Gracey, R.E., retired, who, as announced in THE RAILWAY GAZETTE of July 5, has been elected Chairman of the Bengal & North-Western Railway, is the son of the late Colonel Thomas Gracey, C.S.I., formerly Director General of Railways in India, and for many years Chairman of the B. & N.W.R. The new Chairman was educated at Clifton College and the R.M.A., Woolwich, joining the Royal Engineers in 1896. He served in India on the North Western and B. & N.W. Railways until 1913, during which period he was employed on the construction of the Kalka Simla Railway and was in charge of the Izat Bridge over the Ganges near Allahabad. He served during the war, first with a Field Company, Royal Engineers, and later was for two years in charge of the Mesopotamian Railways on the east bank of the Tigris; he retired from the Army after the war. Lt.-Col. Gracey became a Director of the B. & N.W.R. in 1921 and has now succeeded Sir Henry Burt, K.C.I.E., as Chairman as from July 1. He is a J.P. and County Councillor of Devon and was High Sheriff of that county in 1931.

We regret to record the recent death of Mr. Norman Fulton, Chairman of Albion Motors Limited, a

pioneer in the industry, and joint-founder of his firm.

Mr. Ronald Stemp, General Manager of the Bermuda Railway, has returned this week to Hamilton, Bermuda, after leave in this country. He is the second son of Major C. H. Stemp, formerly Superintendent, Southern Scottish Area, London & North Eastern Railway.

In the course of his speech last week at the annual general meeting of the Great Southern of Spain Railway, Mr. C. H. Pearson, the Chairman, expressed the board's appreciation of the services rendered by Mr. Boag, the General Manager, in the exceptionally difficult conditions with which he and his staff have recently been faced.

INDIAN RAILWAY STAFF CHANGES

Mr. C. G. Graham has been appointed to officiate as Deputy Agent, G.I.P.R., as from April 29.

Mr. W. B. Burford has been appointed to officiate as Deputy Chief Engineer, Bridges, G.I.P.R., as from April 25.

Mr. S. Taylor has been appointed to officiate as Deputy Chief Mechanical Engineer, E.B.R., as from June 18, in place of Mr. S. Simpson transferred to the N.W.R. on May 15.

We regret to record the death, on July 21, of Mr. A. D. Butterfield, formerly Chief Auditor, East Indian and Eastern Bengal Railways.

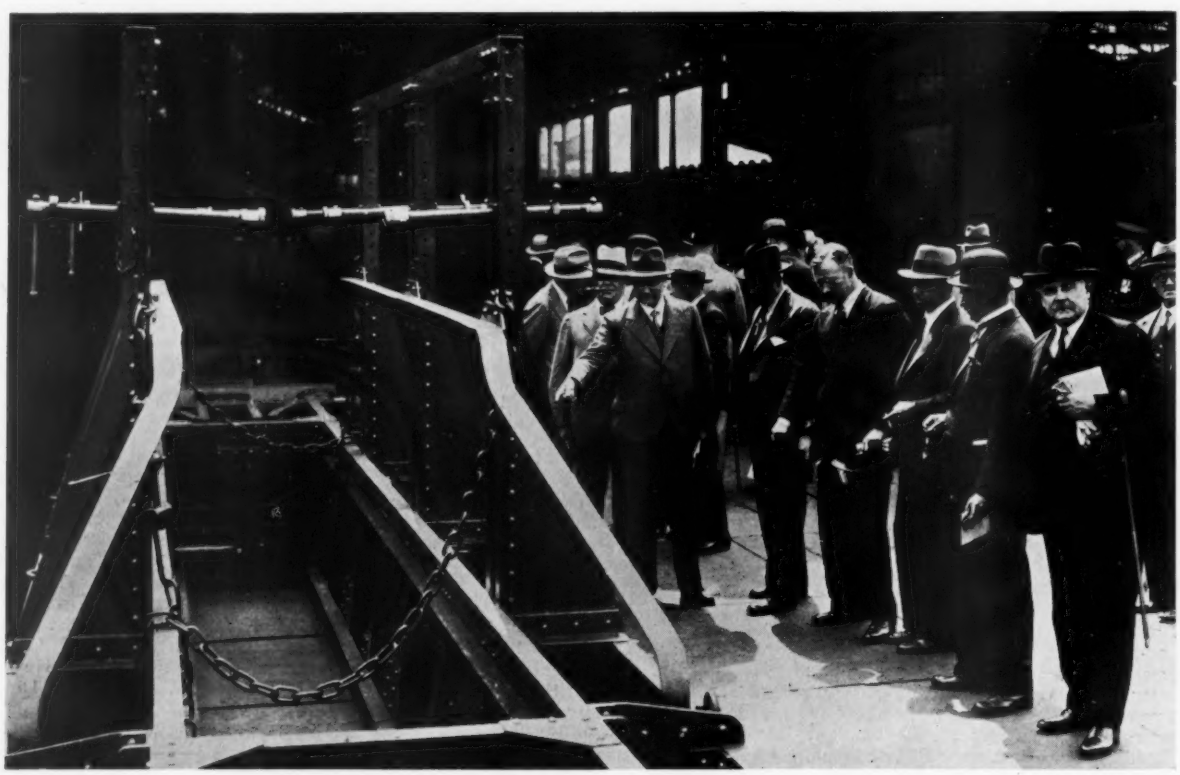
Mr. J. H. Stewart, Staff Assistant, General Manager's Office, has been appointed Assistant Superintendent, Staff, Headquarters, South African Railways and Harbours.

Mr. H. L. Pennock, Chief Storekeeper, Central Uruguay Railway of Monte Video and Associated Lines, has arrived in England on leave.

The Imperial Service Medal has been awarded to 53 railway employees in Eastern Canada.

Exhibition of freight rolling stock for British railways at Euston for Dominion Parliamentary delegates

Messrs. R. A. Butler, Prime Minister of South Australia; R. E. L. Maunsell, Chief Mechanical Engineer, Southern Railway; and W. A. Stanier, Chief Mechanical Engineer, L.M.S.R., inspecting a bulk-grain wagon



Parliamentary delegates at the rolling stock exhibition at Euston, interested in a glass-carrying and other modern types of wagon. (*See article on page 157 of last week's issue*)

PARLIAMENTARY NOTES

Anglo-Indians and Indian Railways

After the third reading of the Government of India Bill had been agreed to in the House of Lords on July 24, Lord Lloyd had an opportunity again to bring forward the case of Anglo-Indians.

Lord Lloyd moved an amendment to clause 242 (railway servants appointments) in more detailed terms than the amendment which he had moved during the report stage of the Bill (as reported in our last issue), and which he then withdrew on an assurance from the Government that they would further consider the matter. In its present form the amendment to the second sub-section of the clause would make the latter read in effect that in framing rules for the regulation of recruitment to superior railway posts, the Federal Railway Authority shall consult the Federal Public Service Commission, and in recruitment generally for railway purposes shall have due regard to the past association of the Anglo-Indian community with railway services in India, and particularly to the specific class, character, and numerical percentages of the posts hitherto held by members of the community and the remuneration attaching to such posts. [The remainder of the clause would remain unaltered.]

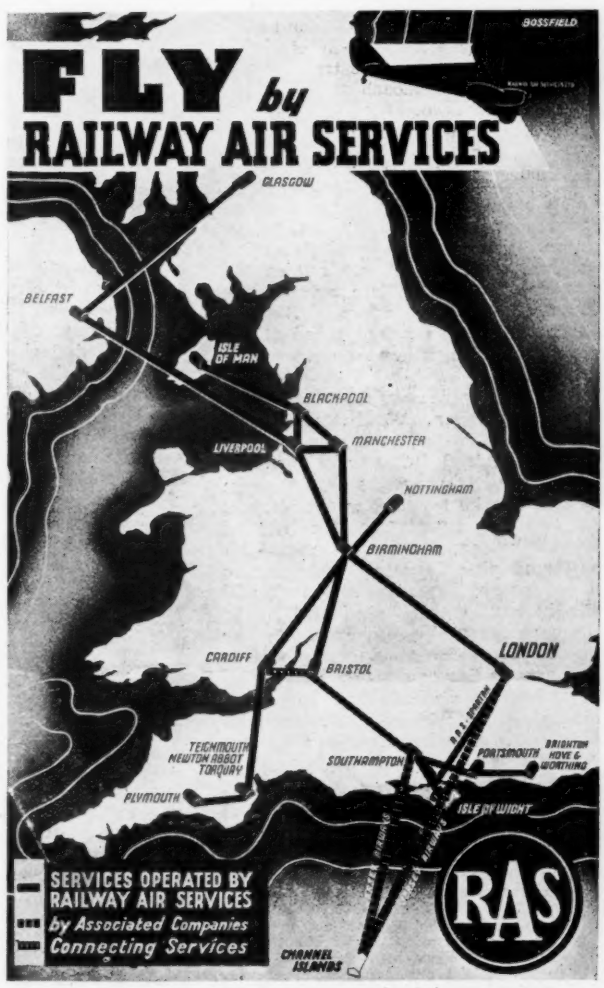
In moving his amendment, Lord Lloyd said that it had been amplified to meet more specifically the anxieties of the Anglo-Indian community. One was with regard to the percentage of posts to be kept for them, and the other was not only that they were to have the percentage of posts but were to be kept employed in the same classes and character of employment as they had hitherto enjoyed. The word "remuneration" now in the amendment was very important to them, because the scales of pay had deteriorated so terribly in recent times. He wished very much that there could have been incorporated in the Statute the agreed percentages of the Government of India's Resolution of July, 1934. The Anglo-Indian community had been admitted to have 8·8 per cent. of the railway official appointments, but now they were given only 8 per cent., which meant a loss of 1,000 posts in a small community. They had also suffered greatly by retrenchment. Many pledges had been given, and during the last 15 years the same claims had been put forward. When the Prince of Wales came out to India on his memorable tour, he had stated that the Anglo-Indian community might be confident that Great Britain and the Empire would not forget them who were so united in their devotion to the King Emperor, and who had given such unmistakable tokens of their attachment to the Empire by their great sacrifices in the war.

The Marquis of Zetland (Secretary of State for India), said that when Lord Lloyd raised this question a few days earlier he promised to look into the matter and see whether this was the best way of safeguarding the interests of the Anglo-Indian community. He had said that he was a little doubtful whether it was wise to put words of this kind into the Bill, since he thought it might create prejudice against a community specially selected for mention. He was not therefore going to resist the amendment if the noble Lord thought that this was the best way of dealing with the matter. He must, however, make it clear that these words were purely declaratory. They did not bind anyone to anything, but merely stated in the statute what was the intention of Parliament with regard to this particular community. He must also make it clear that the words which had been added to the amendment with regard to remuneration could not be held in any way to be a promise that special rates of pay would be provided at any time for particular communities. Having said that, he would add that it was the intention of the Government that the existing policy in this matter—that was to say the policy laid down under the Government of India's Resolution of July, 1934—was the policy which they intended should be pursued. He could give an assurance on that point. More than that, the draft Instrument of Instructions proposed to instruct the Governor-General and the Governors that in the matter of securing a due proportion of appointments in the services to the several communities they should be guided in this respect by the accepted policy prevailing before the issue of these Instructions, unless they were fully satisfied that modification of that policy was essential in the interests of the communities affected or of the welfare of the public. It was his intention to inform the Government of India that the Resolution of July, 1934, was to be regarded by them as the accepted policy, in those words in the intructions from now onwards. He hoped Lord Lloyd would be satisfied that the Government were doing as much as was possible to safeguard the interests of this very meritorious and deserving community.

Lord Lloyd expressed his thanks, and said that the Government statement would give the greatest happiness and satisfaction to people who were anxious about the matter in India.

The amendment was then agreed to, as was also a similar amendment relating to posts and telegraphs. The Bill was afterwards passed.

The House of Commons on July 30 agreed with the Lords' amendments to the Government of India Bill.



Poster showing the extent of the present operations of Railway Air Services

MINISTRY OF TRANSPORT ACCIDENT REPORT

Ashton-under-Hill, L.M.S.R., February 25; and Moira, L.M.S.R., March 20, 1935

As both these accidents were derailments of passenger trains; as both related to the same type of locomotive; as both were reported upon by Colonel Mount, and as each report contains some reference to the other, it will be convenient if both reports are dealt with together.

The scene of the earlier derailment Midland Railway from Barnt Green, is on the branch line of the former through Redditch and Evesham, to Ashchurch. The line is single from Barnt Green to Evesham, but double thence to Ashchurch. The first station south of Evesham is Bengeworth, from which place the line, when travelling south, rises at between about 1 in 260 and 1 in 400. The summit is just short of the 78th mile post and Ashton-under-Hill is almost exactly a mile farther on. The point of derailment was 554 yd. north of the centre of that station. The train consisted of two bogie coaches and was drawn by engine No. 2023, one of the Class 3, or "2000" Class, superheater 0-6-4 tank engine type. The driver was killed. The branch came under the classification of a third-class road, *i.e.*, a branch passenger line over which speed does not generally exceed 45 m.p.h. There was no speed restriction and the train had not to call at the two stations intermediate between the summit and Ashchurch. Colonel Mount estimates that the speed at the time of derailment was not less than 55 m.p.h.

The permanent way was of the old Midland pattern, 30 ft. rails that weighed 85 lb. per yard when put in the road in 1889, but now weigh about 80 lb.; chairs that weighed 46 lb. each, designed to be fastened to the sleepers by two spikes and two oak trenails; outside keying; 9 in. × 10 in. × 5 in. creosoted pine sleepers, 11 sleepers to a rail length; formation of gravel, and ash ballast in the "six-foot." The drainage generally appeared to be good. The District Engineer was in this area in September last, along with his Chief Permanent Way Inspector, arranging the relaying programme for this year. The inspector told Colonel Mount that:—

> I thought then that this was a fair road, but it was getting towards the end of its time and it should be put in for relaying, and it was put in for relaying accordingly (in 1936). There are a lot of decayed trenails, but there are two spikes, and the two spikes should hold any road with reasonable traffic up to 45 m.p.h., at any rate on the straight and on very easy curves as we inspected today; but on curvatures of 40 chains and over we should have more fastenings. I gave instructions in September to the District Permanent Way Inspector that we should change a few sleepers, as required, to keep them going until the road was renewed, and when each sleeper was renewed I expected two spikes and, if necessary, a third with a ferrule.

The engine, as has been remarked, was a tank engine of the 0-6-4 type. A similar engine, No. 2015, was concerned in the Swinderby derailment of June 6, 1928 (see THE RAILWAY GAZETTE of March 29, 1929, pp. 457 and 481). The latter page contained a summary of Sir John Pringle's report on that accident, and reference thereto will show that this type of engine had been working slow passenger trains on the Nottingham-Lincoln branch of the former Midland Railway since July, 1924, and had been used for express passenger trains since March 12, 1928—three months prior to the derailment. On the night in question it was working the Lincoln-Tamworth mail and came off the road when running at a speed of "as much as 60 m.p.h." The mishap was evidently remindful of the Sevenoaks derailment of August 24, 1927, as Sir John opens his concluding remarks by observing:—

> Attention has recently been drawn to the necessity for a first-class road both of material and maintenance, if the use of heavy tank engines is required at high speeds.

That the track at Swinderby was not a first-class road of the character advocated by Sir John may be judged by his statement that the sleeper bed of the track—river Trent gravel—did not afford the resistance required against slewing of the track and two coach screws proved an insufficient fastening of the chairs to the sleepers to prevent spreading of the gauge under the strain set up on a straight line for the side-to-side thrust of the engine. It may be added that the only comment then made upon the engine was that it had a low centre of gravity and there was, therefore, less tendency to rolling motion, but the action of the rear bogie tended to develop hunting and thrusting from side to side of the leading end of the engine frame, especially where considerable sideway freedom was provided for the bogie.

Colonel Mount, when dealing with the present case at Ashton-under-Hill, evidently desired to gain a personal experience of this type of engine, probably having the Swinderby derailment in his mind. He therefore made a run on March 15 on engine No. 2011 on an up slow passenger train from Burton to Leicester; he was accompanied by Colonel Rudgard, the divisional superintendent of motive power, and by Major Wilson, the new Inspecting Officer. The conclusion arrived at by Colonel Mount, he says in his Ashton report, was that:—

> The trip clearly illustrated how sympathetic this engine was to track defects, and riding on the footplate obviously afforded a rapid means of examining the road. On two occasions oscillation developed which, in my opinion, might have rapidly increased to a dangerous extent had speed been a little higher or the track less well maintained.

Resuming a consideration of the Ashton-under-Hill derailment, we come to the evidence given by Mr. Grimoldby, the District Engineer, who had been in charge of the Walsall district, which covers this particular area, for seven years. His evidence is important because one of this class of engine—No. 2024—spread the road near Ashton-under-Hill in August, 1929. It will be recalled from our opening remarks that the track was laid in 1889—46 years ago. Mr. Grimoldby said that the "spot" sleepering, *i.e.*, changing individual sleepers as required, had apparently been going on for the last 15 to 20 years and the road had not been re-sleepered throughout. He submitted a table that showed that of 1,046 sleepers that have been changed during the last five years in the double line between 77 and 79½ mile posts—the derailment was 251 yd. north of M.P. 78¾—75 per cent. had been in the down line on which the accident occurred and that that figure was about 16 per cent. of all the sleepers in the 2½ miles of double line.

In the accident of August, 1929, the gauge had widened zig-zag to a maximum of 1 in. Mr. Grimoldby gave orders for the repair of the road and the damaged sleepers were replaced. No speed restriction was imposed because the engine concerned was said to have been taken off. There was, however, no confirmatory information with regard to this, and the fact is that these engines have been consistently running in this service since they were put on in June, 1929. Mr. Grimoldby also said that since the occurrence in August, 1929, no further trouble of this kind had been reported to him. With regard to the state of the road and conditions of operation, he said that he was not aware that the decayed trenails were not being replaced by spikes; he inspected the road last September and saw these decayed trenails, and, at that time, believing that the traffic and speed were only light, considered that the two fastenings were sufficient. Had he been aware of the class of engine and the booked speed at which it had to run, he would either have imposed a speed restriction, or relaid the road. He thought that trains were stopping at every station and running at slow speed; otherwise he would have questioned the position. He was not aware that there were trains not stopping at Hinton and Ashton-under-Hill.

It is Colonel Mount's opinion that the rapid development of violent oscillation that he noticed, as said above, in the trial trip of March 15, occurred with engine No. 2023. Derailment resulted from the spreading of the road, owing to lateral weakness of chair fastenings, which were unable to resist the side-to-side thrust at the comparatively high speed of 50 to 55 m.p.h. While this engine, he continues, evidently exerted an abnormal punishing effect at such speed, there was also no doubt that the track had been allowed to deteriorate to the extent

that it retained only sufficient margin of safety to carry even normal traffic at 40 to 45 m.p.h.; hence the speed restrictions which it was subsequently decided to impose.

Colonel Mount says later in his conclusions:—

The track was classified as third class for maintenance purposes, the basis of this being that traffic was fairly light and speed was not expected generally to exceed 45 m.p.h. It was realised that the road was nearing the end of its life and it had been proposed for renewal; but evidently there had been serious misjudgment as to its lateral stability under comparatively high speed, though the punishing effect of this type of tank engine was notorious, examples being the derailment at Swinderby in 1928, and the damage here in 1929.

This failure to appreciate the risks being run is illustrated by the pursuance of a prolonged policy of spot replacement of sleepers even after the occurrence in 1929, by the existence of a large number of decayed trenails and reliance upon only two spikes having inferior hold in decayed timbers, and by omission to impose a stringent speed restriction pending renewal. While Mr. Grimoldby, according to his evidence, was out of touch with the prevailing conditions of traffic, and had failed, like the rest of the staff, to realise the effect which these engines might have on weak track material, Permanent Way Inspector Waite had evidently not kept him informed of the true position.

I consider then that Waite was primarily responsible for permitting this road to remain without the strength which would have been afforded by new fastenings in the old sleepers, decayed as these sleepers were. Such decay must have been going on for a long time, and he was aware of the opinions and experiences of his gangers with regard to these engines. He failed, however, even to travel on the footplate, and did no more than change a few sleepers when more extensive renewal and strengthening were clearly required. While I am satisfied that this was the outcome of lack of appreciation rather than lack of interest, I cannot but remark that a Permanent Way Inspector accepts grave responsibility in letting deterioration, even of a road of this character, extend to the lengths it did here, without drawing special attention to it and to the prevailing traffic conditions. Unless he does that and frankly recommends the imposition of corresponding speed restriction, he fails in his duty.

Leaving for a moment the remarks and recommendations with which the Ashton-under-Hill report concludes, we will deal with the Moira derailment, which was a remarkable sequel to the trial trip of March 15, in that the engine, No. 2011, on which Colonel Mount rode, was itself derailed five days later, near Moira, on the Burton-Leicester line. On that occasion there were, fortunately, no fatalities or serious personal injuries. The train consisted of four bogie coaches. The line is double and comes under the category of second-class, which means that it is a passenger line, other than a main trunk passenger line, subject to speeds over 45 m.p.h. The gradient was falling towards Burton—the direction of the train—at from 1 in 150 to 1 in 186 and, as there was no speed restriction and as speed was quickly and easily attainable, the train was probably travelling at not less than 60 m.p.h. The track, which was laid in 1922, generally appeared to be in fair condition, line and level being adequately maintained for a line of that category. Sleepers appeared to be sound and fastenings were in good order, although there was slight indications of the old movements of the chairs on the sleepers; there was little evidence of cutting in of the chairs.

The train in question was an evening train from Leicester to Burton which, until last October, used to terminate at Ashby, but now runs the further 10 miles to Burton non-stop. The working is balanced by the same engine taking an up train in the afternoon from Burton to Ashby, stopping at all stations, and thence, as formerly, on to Leicester. On the morning of March 20 one of the gang of a ganger and five men, when walking to work, noticed, as had happened on some previous occasions, that the line near Gresley tunnel—1½ miles on the Burton side of the derailment later in the day—was badly displaced—as much as 3 in. in certain places, and the gauge spread to ¼ in. thick. The man telephoned the ganger, who forthwith went there with his men—incidentally that prevented the ganger walking his length that morning. About 1.15 p.m., whilst the gang were still working at Gresley, a driver and fireman, who had just been relieved and were walking to Moira, reported to the signalman at Moira West Junction that they had observed four zig-zags in the track to the extent of 3 to 4 in. over about 20 sleepers. The gang was telephoned for and arrived about 2.10. The ganger told Colonel Mount that the track was new 85 lb. rails, laid in only twelve months previously. There were three or four kinks of about 1½ in.; first one way, then the other. He released the fishplate bolts, barred the road straight, tightened up the bolts again and filled in with ashes, where the movement had taken place, and left at 4.30 with the road considered to be safe.

Mr. E. H. d'E. Darby, the Eastern Divisional Engineer, gave it as his opinion that the road had been damaged by the same train the night before, but had not been noticed by the ganger because, for reasons given above, he did not walk his length on the morning of the accident. Several trains had been over the line subsequently, but none drawn by engines of that class. The ganger was able to rectify matters as far as alignment was concerned but the ballast could not have been consolidated to exert its full holding power, with the result that, failing reduction to an appropriate speed, not exceeding 40 to 45 m.p.h., the usual oscillation occurred on the train in question after it had passed through Moira West Junction and derailment followed.

The Moira report concludes as follows:—

I draw attention again, as I did in 1927,* to the desirability of ensuring that drivers, instead of only reporting to the local staff, should make proper reports to their headquarters with regard to any places on the road where they may consider that defective conditions of permanent way exists and excessive oscillation is noticeable, particularly where high speed prevails.

This is one of the essential means whereby the responsible Engineer should be kept in touch with the day-to-day position with regard to the interaction between traffic and the permanent way, thus affording him the necessary opportunity for requisite action in respect of track maintenance and restriction on speed or on the class of engine in operation.

Such action is closely related to the assessment by the Engineer of the maximum justifiable speed over branch lines, and in respect possibly of the operation of particular classes of engine. I have also referred to this in my report upon the accident at Ashton-under-Hill, and I understand that the necessary comprehensive consideration is already in hand.

Although this class of engine is being withdrawn from service, which I think is a prudent step, the circumstances of these two derailments, the general increase of speed, the actual bending of screws, and the displacement of chairs under the passage of these engines have indicated the necessity for strengthening chair fastenings, particularly on branch lines; the Chief Engineer has informed me that he is, therefore, adding the third screw on straight and easily curved road, and he has already tentatively introduced fang-bolts.

As giving some idea also of what is being accomplished in respect of maintenance generally, it is noteworthy that on the Eastern (old Midland) Division alone, which comprises 3,418 track miles of running line, no less than 987 miles have been re-laid, re-railed, or re-sleepered during the five years 1930–34.

Though it was the earlier accident of the two now under review, it is the report on the Ashton-under-Hill derailment that contains Colonel Mount's principal comments, *viz.*, that based on the behaviour of the 2000 Class of locomotive. Forty engines of this type were built in 1907, intended for mixed traffic. They have two inside cylinders, with 18½ in. by 26 in. stroke and an inclination of 1 in 8½. The working pressure is 175 lb. per sq. in., the right-hand crank leading. To appreciate fully the mishaps at Swinderby, Ashton-under-Hill and Moira, it is necessary, Colonel Mount remarks in the Ashton-under-Hill report, to consider some of the characteristics of this engine as a vehicle. Its coupled wheels, 5 ft. 7 in. dia., are larger than is normal for goods engines, and it could therefore, attain speed up to 55-60 m.p.h. with reasonable freedom, though having regard to the existence of slide valves and restricted port area, speed of this order represented the limit. Notwithstanding this type of valve, it was noteworthy that in 1926 these engines were rebuilt with a superheater boiler.

Undamped by a heavy separate tender, the engine has, in fact, a natural frequency of oscillation depending on such factors as weight distribution, the periodicity of the front coil springs, the Cartazzi slides, the laminated bogie check springs, and the action of steam in the cylinders. Should track variations, insufficient in themselves to cause serious movement in a less sensitive machine, follow in sequence so as to coincide sufficiently closely with the engine's natural frequency under the conditions of the moment, oscillation may be rapidly and violently induced, and therefore heavy lateral forces may be set up, which in turn tend to displace the track bodily, or, if fastenings are

* See the summary of the report of the Bearsted derailment of August 20, 1927, in THE RAILWAY GAZETTE of July 20, 1928, p. 162.

sufficiently weak, to spread the gauge.

Colonel Mount concludes the Ashton-under-Hill report as follows:—

(*a*) Having regard to the foregoing considerations and to the circumstances of this derailment, it was decided to make a trial under the following altered conditions, viz., the replacement of the leading axle Cartazzi boxes and of the coil springs by standard type boxes and laminated springs and the replacement of the bogie by a standard bogie with side bolsters as used in the new 2-6-4 type tank engines. As a result, comparative tests, at speeds varying from 35 to 60 m.p.h., with one engine so modified and another not altered, were carried out a few days after the derailment at Moira, on a straight length of second-class track. The conclusion was reached that the unmodified engines were not suitable for working trains at speeds over 45 m.p.h., and, indeed, I was informed that severe oscillation was experienced at no more than 50 m.p.h., the passage of the engine causing some track damage. On the other hand, I understand that the alterations undoubtedly made for improvement, oscillation and roll being damped out, so that even when running at 60 m.p.h. the riding was satisfactory.

Having regard, however, to the facts that these engines now possess superheater boilers of standard design, which can be utilised for other engines, and that modern tank engines with lighter axle loading and higher tractive effort were becoming available, the company decided that the above-mentioned alterations were not justified, and the majority of the engines have been taken out of service with a view to early scrapping and the release of the boilers for use elsewhere; a certain number have been left in goods traffic for the time being, subject to a maximum speed of 45 m.p.h.

(*b*) A speed restriction of 40 m.p.h. has also been imposed on the branch line between Evesham and Ashchurch. This is a necessary protective precaution for the time being, pending the renewal proposed for 1936, as already mentioned, of some 2 miles of the down line covering the site of the accident, on the falling gradient between Hinton and Ashton-under-Hill where high speed is possible; in addition, the relaying of 2 miles of the same line, between Ashton-under-Hill and Beckford has already been approved for 1935. Similar proposals are in hand for the up line.

While I was informed that essential repairs will be effected forthwith, and I am aware of the extent of the efforts which have been made in the last few years to deal with renewals in this division, I feel that the policy of spot replacement of sleepers should, if practicable, be discontinued, and that the renewal programme on this branch should be accelerated. The circumstances of this accident appear to show that unless conditions are abnormal, such as unusually rapid decay of timber, the merits of this method of maintenance are very questionable.

(*c*) With regard to the classification of this branch, it seems doubtful whether it did in fact bear a true relation to the speed and character of the traffic. Apart from the evidence of the district engineer and of the chief permanent way inspector, there is the significant factor that, under the company's progressive policy of scrapping older types of engine, the building of new, heavier, and speedier units is making rapid strides. I suggest that the whole question of the classification of branch lines, not only in respect of bridge loading, but of track fitness for speed in relation to types of engines, requires review, and that at the same time closer liaison between the departments concerned should be maintained, so that speed maxima may be regulated in accordance with the authority of the responsible Engineer.

This matter also seems to warrant consideration from the economic aspect; the operation of this particular type of tank engine has, for example, probably caused much avoidable expenditure, as the result of abnormal track damage during recent years, following the efforts to increase speed. Apart from its tendency to destructive oscillation, the total hammer-blow of the engine amounts to 2·29 tons at 60 m.p.h., while those of individual axles are substantially higher, amounting to 9·66 tons in the case of the driving axle.

(*d*) In this connection generally, the value of the information to be gained from riding on the footplate by those responsible for maintenance of permanent way is of importance, and is recognised by the instructions issued on the subject. There could have been no better practical instrument than this type of engine for ascertaining where track defects exist, and I think that the instructions might well be more definite that permanent way inspectors should make a regular practice of thus travelling over branch lines, as well as over main lines.

P.L.M. Projects in Hand or Abandoned

The report of the P.L.M. Railway for 1934 records the position at the end of the year of various projects undertaken either immediately before the war or in the period of comparative economic normality prior to 1930. Work is in hand on a branch 26 miles long from Chorges (on the Livron-Briançon line) to Barcelonnette, and on a portion of that from Le Puy to Lalevade-d'Ardèche-Prades (57 miles). In connection with the Chorges-Barcelonnette project, contracts were awarded in 1913 for a tunnel (1 mile 58 yd.) and approaches; in 1921 for the foundations of the large viaducts at Chanteloube and Prégo-Diéu; in 1924, for works near Lauzet; in 1929 for a tunnel (1 mile 460 yd.); and in 1930 for works at Longe-Faissole, Le Combas and La Durance, in 1932 at Ubaye, and in 1933 at Chorges. Shortage of funds made it necessary last year to postpone construction of the metal deck for the Prégo-Diéu viaduct (six 357-ft. and two 398-ft. spans), tenders for which had been invited. At the present time the substructure of this line has been completed for 8 miles, and work is in progress on a further 8¾ miles.

The second project is for a railway from Le Puy to Lalevade-d'Ardèche-Prades (57¾ miles), but owing to financial circumstances, it was decided to proceed only with the first 13¾ miles from Le Puy to Le Monastier. The substructure of this section is already in an advanced stage, but last year there were insufficient credits available to permit the allocation of contracts for the superstructure. The work, however, is being pushed forward with a view to opening the line at the earliest possible date.

Contracts for the most important works on the whole 57-mile route were awarded in 1914. They comprise tunnels at Saint-Cirgues (2 miles 125 yd.) and Présailles (1 mile 1,106 yd.), a viaduct at La Recoumène, and various works at the approach to Le Monastier. All these are completed, but separated from one another by incomplete sections.

The P.L.M. Railway is also carrying out certain improvements at Marseilles in connection with extensions to the harbour. The company was asked to prepare plans for lines serving the new quays, and submitted a preliminary scheme in 1926. Although approved in principle in 1929, agreement was not reached as to the division of expenditure. The company has therefore modified its original intentions. As a preliminary, a third line was opened in 1933 between Le Gravier on the Lazaret quay and the new mole now being built in the Joliette basin, passing through Arenc and La Joliette stations. During 1934, the construction of sidings on the mole itself was undertaken.

Two projects have been abandoned in the past year, the most important being that for a line from Avignon to Les Arcs, which would cut 52 miles from the journey to Nice. A preliminary scheme for the improvement of 29·8 miles of existing line between Avignon and Pertuis, and for 58·3 miles of new construction thenceforward to Les Arcs, was prepared in 1921 and provisionally sanctioned in 1927. Surveys of the route were abandoned on December 31 last. A similar fate has overtaken work in connection with the conversion to standard gauge of the metre-gauge railways from Nice to Draguignan and Digne. A preliminary scheme was submitted on December 8, 1927, and surveys were authorised by a Ministerial Decision of October 3, 1931, but are no longer being pursued.

Two projects are still awaiting official sanction. One of these arises from frequent representations by the Chamber of Commerce at Saint Etienne for a direct railway route to the Rhône valley. On August 25, 1926, the company submitted to the Minister of Public Works plans for a line 67 miles in length which would curtail the journey for passengers from Saint Etienne to Valence by 41¾ miles, since the present detour through Lyons would be obviated. Goods would be afforded a route 20½ miles shorter.

The second scheme under consideration is for a branch from Jarrie-Vizille, on the line from Grenoble to Aix-en-Provence and Marseilles, to Bourg d'Oisans. It would be 21 miles in length and would serve the important hydro-electric works in the Romanche valley. Preliminary plans were submitted on March 14, 1928, and approved subject to certain modifications on March 21, 1930. A suitably revised scheme was presented for examination on February 5, 1931.

Regimental Plaques for L.M.S.R. Locomotive. — In his capacity as Colonel of the Royal Scots Fusiliers, Lord Trenchard will present plaques of the regimental crest to the L.M.S.R. locomotive No. 6103, *Royal Scots Fusilier*, at Ayr station today. The plaques, which will be carried on each side of the engine above the name-plates, will be received on behalf of the L.M.S.R. by Mr. Charles Ker, Chairman of the L.M.S. Scottish Local Committee. A regimental party, including band, will take part in the ceremony.

THE MONTH'S RAILWAY LAW

Railway Company's Duty to Fence

Symons v. *Southern Railway Company*. (*May* 16.)

The amount involved in this case was small—a County Court action to recover £5, the value of two sheep, which strayed through a gap in a fence on to the railway line and were killed. But the case turned on the important question of the company's duty to maintain a fence along the line so as to keep off sheep and cattle. The plaintiff and his father were formerly the tenants and now the owners of a farm which adjoined the line at Launceston in Cornwall. In 1895 the railway company had bought part of the farm land from the owners and had paid them compensation to put an end to the owners' rights. The duty to fence is imposed by Section 68 of the Railway Clauses Act, 1845, but a proviso to the section excuses this duty where the "owners and occupiers" have agreed to receive compensation in lieu of their rights. The plaintiffs argued that such an agreement was only good if made with both owner and occupier, but the County Court Judge and the Court of Appeal did not accept this view. They held, however, that the agreement with the owner although good in itself, did not absolve the company from its further duty to the occupier. This seemed to conclude the case in favour of the plaintiff, but there was a further complication because, in 1910, the remainder of the farm was conveyed to the plaintiff's father and since that date the plaintiff and his father had been in occupation as owners, and the question was raised whether the occupier's interest as tenant from year to year was merged, in law, when in 1911 the plaintiff's father became the owner of the fee. This question of merger depends upon intention, and as no intention was expressed at the time the Court held that there was no merger so to deprive the plaintiff of his right as occupier to have the fence maintained.

Cattle on the Line

In the judgment the Master of the Rolls points out that under the Act the railway company is required to fence, not only to preserve the cattle of adjoining owners or occupiers from straying on to the line, but also "for protecting their land from trespass by reason of the railway," that is to say, the company must not allow the railway to become a means of access to the adjoining lands; but the decision in the case shows clearly that under the above section the interests of the owner and the occupier are distinct.

Thus in *Cory* v. *Great Western Railway Company*. (7 *Q.B.D.* 322), a tenant recovered for the loss of his cattle on the line because he was not a party to an agreement by which his landlord gave up the right to fencing. So too in the present case, the Court of Appeal held that the County Court Judge was right in awarding the plaintiff £5 for the loss of his two sheep.

Plaintiff's Infirmity and the Law of Negligence

Henderson v. *L.M.S. Railway Company*. (*The Times, June* 21.)

The degree of care to be exercised by drivers of a railway company towards its passengers is fixed with regard to a person's normal power of taking care of himself and not with regard to abnormal cases. Abnormal infirmity may make a difference however in those cases where it is apparent. But it is certainly good law that a motor driver may be excused if he runs over a deaf man who does not hear the horn, or a blind man who does not see a light.

In *Henderson* v. *London Midland & Scottish Railway Company*. (*The Times, June* 21) a Glasgow shipbuilder brought an action against the company for £5,000 damages for personal injuries. He was attempting to enter a train at Troon station, but owing to his weight (over 20 stone) he experienced great difficulty and received personal injuries. The Court of Session in Edinburgh held that the plaintiff's physical infirmity was the effective cause of the accident and non-suited the plaintiff upon the point of law. The company's duty to passengers is a general standard of care and not one which varies with the individual passenger.

Passengers' Luggage

Demetriadi v. *L.N.E. Railway Company*. 1935 *Sc.L.T.* 30.

This case was settled before the hearing but the judgments of the Sheriff's Court upon the facts of the case and the points at issue are interesting. The "pursuer" (the plaintiff in English procedure), who was a young lady, travelled by rail to Edinburgh and on arrival at Waverley station handed her dressing case to a porter from the railway hotel adjoining the station. When she arrived at the hotel and asked for her dressing case, it was not produced and the claim was that the case, which contained jewellery to the amount of £215, was stolen by the hotel porter while it was in his custody. It is to be observed that she had not booked a room, and had only gone up to see whether a room was available for her. In such a case the relationship of guest and innkeeper is not established until the guest actually gets a room by arrangement with the landlord or his servant. The case so far was just a common law action against a master for negligence or fraud of his servant, on the ground that "the porter was bound to exercise reasonable care as to the safe custody of the article entrusted to him." Both the Sheriff's substitute and the Sheriff himself agreed that proof should be allowed as to this, although neither the Carriers Act nor the Innkeepers Act applied to the case. After all this the case was settled! But it may serve as a useful guide in future cases of the kind, where there is a resemblance upon the facts.

Railway Valuation—A Scottish Case

L.N.E.R. Company v. *Glasgow Assessor*. *L.N.E.R. Company* v. *East Lothian Assessor*. 1935 *Sc. L.T.* 217.

The question raised by these two cases was whether (*a*) two pieces of ground and railway siding, (*b*) certain disused stations, all in Scotland, should be included in the local valuation roll or the railway valuation roll.

The material section of the Railways (Valuation for Rating) Act, 1930, is section 22 (*g*), which provides that, for the purposes of this section, premises occupied as a dwellinghouse, hotel or place of public refreshment shall be deemed not to form part of the railway company's undertaking.

The most interesting part of this case in our view was the question of the disused stations. These were on a branch line which was occasionally used for goods traffic, and occasionally for passenger traffic during the holiday season, during which part of the buildings were furnished and let to visitors at a weekly rent.

Clearly the sidings were not let "so as to be capable of separate assessment," the railway company being still tenants and occupiers.

The Lords who composed the Lands Valuation Appeal Court held therefore that they were wrongly included in the local valuation roll, and should be entered in the railway valuation roll.

RAILWAY AIR SERVICES POSTER.—The London-Isle of Wight route operated by Railway Air Services Limited in conjunction with Spartan Air Lines is now being advertised by a poster which does handsome justice to the attractions of this varied journey. The artist, Mr. Charles Pears, could not compress into one design the beauties of Surrey heaths and pine woods, and of the Hampshire hills—two aspects of the landscape traversed which by themselves entitle this route to claim more picturesque variety than any other of similar length—so he has chosen to depict its final and culminating pleasure, the Solent crossing. A "Spartan Cruiser" monoplane is seen approaching the island, and there is as much to hold the eye in the restrained colouring of the land and seascape as in the central feature of the design afforded by the machine. This, by the way, is one of those with its undercarriage enclosed by streamlined "spats," a modification which has entirely removed the stork-like appearance of the earlier aircraft of this type. The letterpress of the poster gives fares and journey times to and from London but makes no mention of the Southampton-Shanklin air ferry, a service receiving less support than it deserves if only for the panoramic view it gives over the whole of Southampton Docks.

RAILWAY AND OTHER MEETINGS

GREAT SOUTHERN OF SPAIN RAILWAY CO. LTD.

The ordinary general meeting of the Great Southern of Spain Railway Co. Ltd., was held at the company's offices, 2, Broad Street Place, E.C.2, on July 23, Mr. C. H. Pearson, Chairman of the company, presiding.

Mr. F. P. Higgs (Secretary) read the notice convening the meeting and the auditors' report.

The Chairman, in moving the adoption of the report and accounts, said that the failure of the Spanish Government to fulfil its undertakings, the continued depression, and the poor iron ore traffic, had been seriously reflected in the working results, so that the company had to record a net loss of £20,949. This was a deficit of a further £5,180 compared with 1933, due to unavoidably increased expenses. Gross receipts, at £111,445, showed an increase of £2,094, traffic other than minerals having slightly improved. Mineral receipts, however, were practically the same as in the previous year, totalling £32,468.

It was disappointing that despite a revised merchandise classification and the application of a 15 per cent. surcharge to tariffs, general freight traffic in 1933 and 1934 had been smaller than in 1932. Road competition was in part responsible, and the Government had now introduced measures permitting the railways not only to run their own motor services, but to see that their competitors did not evade taxes or operate under unregulated conditions.

Every effort had been made during the year to continue the special economies inaugurated in 1933, but the necessity of issuing further materials from the dwindling stores and the higher price of coal and lubricants caused an increase in working expenses, including pensions, of £6,473. Nevertheless, the total of £129,140 compared with £200,813 in 1929.

A paragraph in the directors' report referred to the critical situation which had led the company on May 31, 1935, to notify the Government that after June 15 the only amounts available for working expenses, including wages, must be the actual traffic receipts, and the Chairman recapitulated the causes leading up to this step. The Government had agreed to facilitate temporarily, by means of cash advances, the payment of the higher wages for railway workers imposed in 1920. This was to be followed by a provisional, and finally a permanent, increase of tariffs. The new tariffs, however, were far from compensating for the cessation of the Government loans, and as the company's principal traffic was with the declining iron ore industry, higher rates were unlikely to stimulate business. Even this assistance, moreover, had not been granted until long after it was promised, and since 1929 the railway had borne unassisted the whole burden of higher wages, aggravated by other restrictions and regulations.

The importance of the iron ore traffic was shown by the fact that the diminution in the tonnage carried compared with 1929 represented a decline in receipts of £109,905. Without iron ore, the railway had not the means of self-support. In its communication to the Spanish Government of May last, the figure quoted as due from the State in fulfilment of its promise to assist the payment of higher wages was about £156,552. In 1934, receipts from passengers and general merchandise failed to cover the pay bills and pensions alone by Ptas. 79,912. This fact was pointed out in the communication of May 31 to demonstrate that the company could not continue to pay the wages of the establishment at existing rates.

Meanwhile, the Railway Association had been active in its endeavours to secure justice for the railways, and had approached the Minister of Public Works to secure that in a new Railway Statute, which was understood to be contemplated, the smaller companies should receive special treatment, and in the meantime be accorded immediate assistance.

Following the steps taken by the company, an official commission had visited the line, and its report, with subsequent Government action, was now being awaited. Whatever was the outcome, the prime fact remained that the company at present had no means other than traffic receipts to deal with expenditure, and these, for the first 28 weeks of the current year, had averaged about £896 weekly, disregarding mineral traffic. After remitting funds to meet wages up to June 15, and to keep the railway going until that date, cash in hand and investments in London amounted to £5,900 at current prices. It was evidently impossible to run a railway 104 miles in length on such results, and at the same time retain the full staff, leave wages untouched, provide for pensions, and maintain equipment in a state at least compatible with safety.

The railway could still perform a useful function by transporting iron ore, and it was to be hoped for the economic welfare of the districts served that arrangements would be made whereby the mines now closed could be re-opened. The railway would thus again become at least self-supporting.

Shareholders would recognise that the anxieties and difficulties, which had for so long confronted the General Manager of the company and his staff, had been increased during the past year, and the Chairman was sure they would join with the board in expressing appreciation of the services rendered by Mr. Boag, the General Manager, Señor Ramos, the representative in Madrid, and the company's staff, solicitors, and friends in Spain.

The report and accounts were unanimously adopted.

ARMSTRONG WHITWORTH SECURITIES CO. LTD.

Major-General Guy P. Dawnay in the course of his speech at the general meeting last week of Armstrong Whitworth Securities Co. Ltd., said:—

I must now say a few words about the operating companies on the Tyne. Last year, when reviewing the position of the Engineers Company at Scotswood, I painted a rather gloomy picture of the prospects for steam locomotive work. This forecast, unfortunately, turned out to be a true one; but I am glad to say that towards the end of the year prospects began to improve, and we obtained our full share of the business that was then offering, the net result being that a very radical improvement in the position at Scotswood, so far as locomotive building is concerned, has been effected.

Scotswood's reputation for quality, always recognised as of the highest class, is being still further enhanced by the locomotives which we are now turning out. The equipment of Scotswood works is at least equal to that of the best locomotive builders in this country; and has enabled us to manufacture these locomotives at a very low cost indeed.

Our development of the diesel traction department has gone steadily forward, and I think, that today our reputation in this business stands higher than ever. Two 1,300-b.h.p. diesel-electric locomotives ordered for India have been shipped, and, we hope, will lead to further and increasing orders from India. Six railcars on the Madras and Southern Mahratta Railway have now been in service for some months, and we are receiving very favourable reports of their performance. We built a 250-b.h.p. shunting locomotive to the order of the L.M.S.R., and after a full year's service we have received a further order for ten more powerful units of the same class to handle shunting at the various depots. We have on order a similar unit for the Bombay Baroda and Central India Railway. We also have on order nine 300-b.h.p. power equipments for railcars for the Central Argentine Railway.

I must close with a few words regarding the general reorganisation of the balance-sheet. The plan which we have adopted involves the elimination of our debentures through the intermediary of a new company which will take over this company's chief assets and obtain such advance against them as may be necessary for effecting that redemption. This arrangement has been made with the help and co-operation of the Bank of England. It

is probable that the advance will, in fact, amount to a considerably smaller figure than was originally estimated. For since January 1 in the current year realisations, in particular of ship debts, have reached such proportions that there will be a large sum available in cash for debenture redemption. Actually we have at this date, as the result of realisations, the sum of nearly £900,000 in available cash from which to provide for this company's liabilities, for working capital for the operating companies, and for debenture redemption. Any equity after the repayment of the loan will be represented in shares of the new company, held by the Securities Company, and will therefore revert to this company at the conclusion of the transaction.

On the other hand, there will be the two operating companies, the Engineers Company and the Ironfounders Company, with a greater volume of work in hand, and I hope in prospect, than they have had for many years past. It will be possible to allocate to them what we hope and believe may prove an adequate cash working capital, so that, in favourable circumstances, they may reach that point of successful operation at which all our work of the past six years has been aimed.

I wish to state perfectly clearly here that the Bank of England has consented to make possible the redemption of the debentures in the manner which I have described in no way, as I need hardly say, as wishing to continue to hold any responsibility for a competitive industrial unit, but entirely because of the importance of the undertaking as a labour unit to the North-East Coast, and of the effect which the closing down of the works at Scotswood and Gateshead would have on employment in one of the depressed areas.

LONDON TRANSPORT SPORTS GALA.—The Metropolitan Railway, which signalised its first appearance at this event last year by winning the London Transport Aggregate Cup, retained its title by a still wider margin of points last Saturday. Competition for the second place was exciting, and the honours finally went to the District Railway, which recovered from fifth after seven events to a total of 23 points compared with the winners' 30. Tramways Central was third with 19 points. The half-mile record was broken by H. W. Shields, of Tramways Central, whose time of 2 min. 3½ sec. compared with the previous fastest of 2 min. 5½ sec. The prizes were presented by Mrs. Pick. Votes of thanks were proposed to Mrs. Pick by Sir Edward Holland, and to the organisers, stewards, and the Tramways Central military band, which entertained throughout the programme, by Mr. P. Ashley Cooper. Among the other guests were :—

Brig.-Gen. Sir Henry Maybury (Member of the Board), J. S. Anderson (Secretary and Treasurer), G. H. Brooks (General Superintendent, Tramways), A. A. M. Durrant (Engineer, Central Omnibuses), and J. P. Thomas (Operating Superintendent, Railways).

RAILWAY AND OTHER REPORTS

Great Western Railway.—The Secretary writes, July 26 :—" The gross receipts from railway and ancillary businesses for the half year ended June 30, 1935, were £35,000 more than in the corresponding period of last year. Expenditure on railway and ancillary businesses increased by approximately £18,000, and the increase in net revenue from all sources, including interest, amounted to £25,000. The total increase in railway receipts was £26,000, passenger train receipts showing an increase of £72,000, miscellaneous receipts an increase of £2,000, and goods train receipts a decrease of £48,000, due largely to the fact that the half year ended June 30, 1935, contained one Sunday more and one Monday less than the corresponding half year of 1934. The increase in gross receipts from ancillary businesses was £9,000. The expenditure for the half year included approximately £120,000 in respect of the partial restoration of the percentage deduction from salaries and wages and the cost to the company of Jubilee concessions. After making an appropriation from the free reserves of the company, the directors have decided to declare an interim dividend of ¼ per cent. on the consolidated ordinary stock for the half year to June 30, which compares with a dividend of ¼ per cent. for the half year ended June 30, 1934. Dividend warrants will be posted on the 14th proximo."

London & North Eastern Railway.—The Secretary writes, July 26 :—" The directors after providing for the payment of fixed charges and interest on debenture stocks have declared interim dividends for the past half year at the following rates :—2 per cent. for the half year on the 4 per cent. 1st guaranteed stock ; 2 per cent. for the half year on the 4 per cent. 2nd guaranteed stock ; the warrants for these dividends will be posted on August 14. Consideration of payment of dividends upon other stocks has been deferred until the accounts for the whole year are available.

" Compared with the corresponding period of 1934 there is a decrease in gross receipts of railway and ancillary businesses and miscellaneous receipts (net) of £74,500, and an estimated increase in expenditure of £252,400, leaving a decrease in net receipts of £326,900. Passenger train traffic receipts show an increase of 3·07 per cent., but merchandise and coal traffic receipts have decreased by 2·16 per cent.

" For the 26 weeks ended June 29 compared with the corresponding period of 1934, the number of passengers originating on the company's system (excluding season tickets) showed an increase of 2,541,000, or 3·04 per cent. ; the total merchandise and coal traffic (originating on the company's system or invoiced by the company) showed a decrease of 1,088,300 tons, or 2·04 per cent. ; passenger engine mileage increased by 735,100 miles, or 2·00 per cent. ; goods engine mileage decreased by 302,400, or 0·75 per cent. The additional expenditure in salaries and wages for the six months has amounted to £227,800, which is principally due to the partial restoration of the percentage deductions."

Charles Churchill & Co. Ltd.—For the year to March 31, 1935, the profit was £1,969. Adding £878 brought in gives a total of £2,847, which it is proposed to carry forward. No dividend can be paid at present, but the directors would be favourably inclined to a payment of some arrears of preference dividend during the current year if business continues to improve.

Vickers Limited.—The following interim dividends for the half-year ended June 30, 1935, will be paid on Monday, August 5, 1935 :—2½ per cent. (less income tax) on the preferred 5 per cent. stock ; 2½ per cent. (less income tax) on the 5 per cent. preference shares. An interim dividend of 2½ per cent. (free of income tax) will be paid on the cumulative preference shares on Friday, August 23.

Rohilkund & Kumaon Railway.—The interim report for the half-year to March 31 shows that net earnings (open system) were Rs. 20,43,435 (against Rs. 20,33,999 for the corresponding period of 1933-34). The company's share of net earnings in sterling (at 1s. 6d. to the rupee), after deduction of Indian income-tax and net Indian charges, &c., is £67,790 (against £68,301). After providing for interest and dividends on debenture and preference stocks, and making provision for the Secretary of State's share of surplus profits, there remains £58,236. The board has declared an interim dividend of 4 per cent., together with a bonus of 2 per cent. for the half-year (the same), less tax at 2s. 5d., on the ordinary stock. This will absorb £21,100 net, leaving £37,136 to be carried forward.

Bengal & North Western Railway.—Net earnings on the open system for the half-year ended March 31 were Rs. 104,70,287 (against Rs. 95,17,262 for the corresponding period of 1933-34). The company's share of these in sterling (at 1s. 6d. a rupee), after deduction of Indian income-tax and net Indian charges is £404,607 (against £382,074). After providing for interest and dividends on debenture and preference stocks and making provision for the annual payment of £35,000 to sinking fund, the board has again declared an interim dividend of 4 per cent. and a bonus of 4 per cent. on the ordinary stock, which for the half-year, less tax at 2s. 6d., will absorb £210,000 net, leaving a balance of £116,319 to be carried forward (against £100,711 brought in). An increase (Rs. 6,12,323) in working expenses was largely on account of earthquake damage repairs on the Tirhut section.

NOTES AND NEWS

Caravan Holidays in Scotland.—To assist motorists who wish to enjoy a caravan holiday, the L.N.E.R. has compiled a list of all the trailer caravans available for hire in Scotland, and the Passenger Manager, L.N.E.R., Waverley station, Edinburgh, will be glad to answer inquiries.

West of Scotland Electrification Schemes.—On the invitation of Glasgow Corporation, the L.M.S.R. and L.N.E.R. have agreed to send representatives to a conference at which proposals regarding the electrification of railways in Glasgow and the West of Scotland will be discussed. In our issue of July 19 we made earlier reference to the proposed conference.

New C.I.T. London Offices.—The Compagnia Italiana Turismo, which represents the interests of the Italian State Railways, formally opened on Tuesday large and convenient public offices in the building of the Piccadilly Hotel. The offices symbolise the Fascist era in colour scheme and appurtenances. They have been designed by Messrs. Michael Racklis, Gustavo Pulitzer-Finali, and George Manner.

London Transport Bills.—The London Passenger Transport Board (Finance) Bill, which has been through the House of Commons, was, on July 24, reported without amendment, from the Unopposed Bills Committee of the House of Lords, and was read a third time in that House and passed on July 30. It is now waiting for the Royal Assent, as is also the London Passenger Transport Board Bill, the Lords' amendments to which were agreed to in the Commons on July 29.

Steel Cartel Agreement.—The British Iron and Steel Federation signed on July 31, in London, a five-year agreement with the International Steel Cartel. The agreement, which will come into force on August 8, provides for an optional break at three years. During the 12 months from August 8, the total imports into the United Kingdom, from cartel countries, are not to exceed 670,000 tons. For the four succeeding years they are not to exceed 525,000 tons per annum.

Metrovick Change of Address.—The Metropolitan-Vickers Electrical Co. Ltd. advises us that both its London office and also the offices of its export company are being removed from Bush House and that on and from August 6 will be at 1, Kingsway, W.C.2. The telegraphic address will be Multiphase, Estrand, London, but the telephone number will remain unchanged.

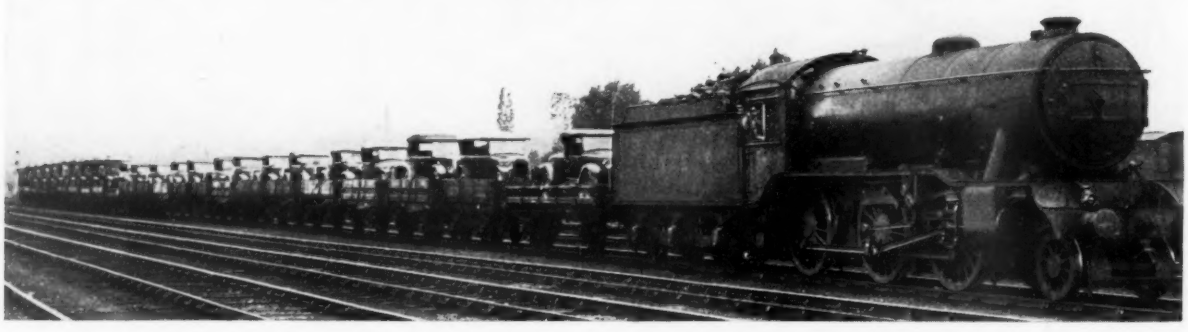
Burlington Zephyr's Record.—The original Burlington Zephyr of the Chicago-Burlington and Quincy Railroad has had a fourth car added to it, increasing the capacity from 72 to 112 seats. It made its first trip between Lincoln, Nebraska, and Kansas City as a four-car train on June 24. A careful inspection after the train had covered 138,937 miles showed that not any part had worn perceptibly. During seven months' performance in regular service as a three-car train, the Zephyr has shown an increase in passenger traffic of 136 per cent. of the two steam trains it supplanted. Almost daily more passengers have been carried than the number of seats.

Bicycles in London Tube Trains.—Early this week the London Passenger Transport Board posted announcements at station booking offices that "from July 31 London Transport will not convey cycles on Piccadilly trains running over any section of the District or Metropolitan lines." Actually, bicycles have never been conveyed in tube trains with official sanction, but where Piccadilly Line trains run over sections also served by the District Line a passenger with a cycle ticket sometimes took his cycle into a tube train and has not been stopped until now. Tube stock is considered too small to permit the practice to continue. The present ruling results in the discontinuance of bicycle traffic over only one section of the District Line, namely Ealing Common to South Harrow, which is now served only by Piccadilly Line tube trains.

Railway Travel for Baseball Teams.—A suggestion made to Mr. William Harridge, President of the American Baseball League, that, if air travel was used for the transport of players, towns over a wider area could be represented in important matches, has been replied to as follows: "Not once to the best of my knowledge has a ballplayer been hurt in a railroad accident. Moreover we have never missed a scheduled game because of railroad delay. We would be foolish, therefore, to say nothing of being ungrateful, if we were to switch from railroads for our travel."

Road Merchandise in the Irish Free State.—The Railway Tribunal of the Irish Free State has had under consideration, applications under the Road Transport Act, 1933, from railway companies, submitting proposed classifications of merchandise for conveyance by merchandise road transport. The applications were by the Great Southern Railways Company, and the Limerick Steamship Company, and by the following companies and committees so far as traffic in the Free State is concerned:—Great Northern Railway; County Donegal Railways Joint Committee; Londonderry and Lough Swilly Railway; and Sligo, Leitrim and Northern Counties Railway. The respective classifications have been determined by the tribunal and copies will be available after August 15.

Argentine Decisions to Complete Connections with Chile.—According to a Valparaiso advice by air mail, dated July 4, it is reported that the President of Argentina has issued a decree ordering the construction of the Argentine section of the Antofagasta-Salta Railway, the platelaying of which has been begun on the Chilean side of the frontier. The same message states that the Argentine Government has decided to reconstruct the section of the Transandine Railway that was so



Motor vehicles of the Northern Command being conveyed by special L.N.E.R. train on their way from York to the South for training purposes (*see editorial note on page* 178)

seriously damaged by landslides and floods. This aerial communication comes from the Valparaiso branch of the Anglo-South American Bank Limited and is published in its *Cabled Reports Circular*.

Canadian Pacific Earnings.—Gross earnings of the Canadian Pacific Railway for the month of May, 1935, amounted to $9,914,000, a decrease of $540,000 compared with May, 1934, and working expenses were $8,770,000, an increase of $118,000, leaving net earnings $658,000 lower, at $1,144,000. Aggregate gross earnings from January 1 to the end of May, 1935, amounted to $46,339,000, a decrease of $862,000 compared with the corresponding period in 1934, and the aggregate net earnings of $4,658,000 showed a falling off of $1,641,000.

Canadian National Earnings.—For the month of May, 1935, gross earnings of the Canadian National Railways amounted to $14,047,172, a decrease of $720,682 in comparison with May, 1934. Operating expenses ($13,390,853) at the same time advanced by $442,034, leaving net earnings $1,162,716 lower, at $656,319. Aggregate gross earnings from January 1 to May 31, 1935, were $66,429,716, an improvement of $848,416, but the aggregate net earnings of $2,673,397 showed a decrease of $716,851.

Road Accidents.—The Ministry of Transport return for the week ended July 27, 1935, of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding period of last year :—

	Killed, including deaths resulting from previous accidents	Injured
England	97 (136)	4,380 (4,711)
Wales	3 (7)	255 (202)
Scotland	12 (13)	465 (459)
	112 (156)	5,100 (5,372)

The total fatalities for the previous week were 123, as compared with 144 for the corresponding period of last year.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 30th Week			Totals to Date		
	1935	1934	Inc. or Dec.	1935	1934	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,925¼ mls.)						
Passenger-train traffic...	677,000	675,000	+ 2,000	13,909,000	13,583,000	+ 326,000
Merchandise, &c. ...	433,000	421,000	+ 12,000	13,349,000	13,285,000	+ 64,000
Coal and coke ...	185,000	186,000	− 1,000	6,853,000	6,845,000	+ 8,000
Goods-train traffic ...	618,000	607,000	+ 11,000	20,202,000	20,130,000	+ 72,000
Total receipts	1,295,000	1,282,000	+ 13,000	34,111,000	33,713,000	+ 398,000
L.N.E.R. (6,336 mls.)						
Passenger-train traffic...	435,000	431,000	+ 4,000	9,027,000	8,799,000	+ 228,000
Merchandise, &c. ...	308,000	299,000	+ 9,000	9,209,000	9,230,000	− 21,000
Coal and coke ...	180,000	190,000	− 10,000	6,624,000	6,791,000	− 167,000
Goods-train traffic ...	488,000	489,000	− 1,000	15,833,000	16,021,000	− 188,000
Total receipts	923,000	920,000	+ 3,000	24,860,000	24,820,000	+ 40,000
G.W.R. (3,749¼ mls.)						
Passenger-train traffic...	286,000	293,000	− 7,000	5,752,000	5,685,000	+ 67,000
Merchandise, &c. ...	188,000	186,000	+ 2,000	5,419,000	5,359,000	+ 60,000
Coal and coke ...	92,000	92,000	—	2,948,000	2,967,000	− 19,000
Goods-train traffic ...	280,000	278,000	+ 2,000	8,367,000	8,326,000	+ 41,000
Total receipts	566,000	571,000	− 5,000	14,119,000	14,011,000	+ 108,000
S.R. (2,171 mls.)						
Passenger-train traffic...	405,000	387,000	+ 18,000	8,556,000	8,340,000	+ 216,000
Merchandise, &c. ...	65,000	68,000	− 3,000	1,811,500	1,918,000	− 106,500
Coal and coke ...	25,000	28,000	− 3,000	888,500	930,000	− 41,500
Goods-train traffic ...	90,000	96,000	− 6,000	2,700,000	2,848,000	− 148,000
Total receipts	495,000	483,000	+ 12,000	11,256,000	11,188,000	+ 68,000
Liverpool Overhead ... (6½ mls.)	1,280	1,276	+ 4	34,767	33,753	+ 1,014
Mersey (4½ mls.) ...	3,839	3,823	+ 16	120,388	123,780	− 3,392
*London Passenger Transport Board ...	532,700	526,600	+ 6,100	2,197,400	2,160,500	+ 36,900
IRELAND						
Belfast & C.D. (80 mls.) pass.	4,069	4,713	− 644	74,189	74,159	+ 30
,, ,, goods	564	538	+ 26	14,991	15,666	− 675
,, ,, total	4,633	5,251	− 618	89,180	89,825	− 645
Great Northern (543 mls.) pass.	13,500	14,400	− 900	298,050	280,600	+ 17,450
,, ,, goods	9,250	8,300	+ 950	271,250	258,150	+ 13,100
,, ,, total	22,750	22,700	+ 50	569,300	538,750	+ 30,550
Great Southern (2,124 mls.) pass.	30,953	31,852	− 899	685,299	681,469	+ 3,830
,, ,, goods	32,327	28,476	+ 3,851	1,021,960	955,127	+ 66,833
,, ,, total	63,280	60,328	+ 2,952	1,707,259	1,636,596	+ 70,663

* 4th week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period of last year ; last year's figures are, however, adjusted for comparative purposes

British and Irish Railways Stocks and Shares

Stocks	Highest 1934	Lowest 1934	Prices July 31, 1935	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	66½	48½	50	−1
5% Con. Prefce. ...	118	109	123½	—
5% Red. Pref. (1950)	115	107	113½	—
4% Deb.	117	105	115½	—
4½% Deb.... ...	119	109	115½	—
4½% Deb.... ...	129½	115¼	127½	—
5% Deb.	135	126¼	138½	—
2½% Deb.... ...	75	64	78	—
5% Rt. Charge ...	134 7/16	123¼	136½	—
5% Cons. Guar. ...	132¾	121¾	135½	—
L.M.S.R.				
Ord.	30½	19½	20½	−1
4% Prefce. (1923)	64¼	41	54½	−2
4% Prefce. ...	87	69½	84½	—
5% Red. Pref. (1955)	107	92½	104½	—
4% Deb.	114⅛	100½	107½	—
5% Red. Deb. (1952)	118 11/16	111¼	115½	—
4% Guar.	106½	96¾	104	—
L.N.E.R.				
5% Pref. Ord. ...	24¾	13½	10½	−1¼
Def. Ord.	11½	6⅞	5½	−⅜
4% First Prefce. ...	76	59½	60½	−3½
4% Second Prefce.	47	25½	22	−2½
5% Red. Pref. (1955)	94½	80	82½	−2
4% First Guar. ...	104	92	101	—
4% Second Guar.	97⅞	86½	95	—
3% Deb.	90	74½	81½	—
4% Deb.	114	99¼	106	—
5% Red. Deb. (1947)	117	108	113½	—
4½% Sinking Fund Red. Deb.	111¼	105¼	110	—
SOUTHERN				
Pref. Ord.... ...	90	63⅛	83	−1
Def. Ord.	32⅝	19	21	−1½
5% Prefce. ...	118 5/16	107½	123½	—
5% Red. Pref. (1964)	115¾	107½	116½	—
5% Guar. Prefce.	132	120¾	135½	—
5% Red. Guar. Pref. (1957)	119½	113	119½	—
4% Deb.	116½	103¼	114	—
5% Deb.	134	124 13/16	135½	—
4% Red. Deb. 1962–67	113 11/16	105 9/16	113½	—
BELFAST & C.D.				
Ord.	6	5	4	—
FORTH BRIDGE				
4% Deb.	110	100	108½	—
4% Guar.	110	100	107½	—
G. NORTHERN (IRELAND)				
Ord.	9¾	4 15/16	15	+¼
G. SOUTHERN (IRELAND)				
Ord.	25	12½	32	+2
Prefce.	21½	13 15/16	46⅛	+3⅛
Guar.	48	39	78	+2
Deb.	67	59	82	+3
L.P.T.B.				
4½% "A" ...	126	115	124½	—
5% "A"	135½	124½	134½	—
4½% "T.F.A." ...	113½	107½	111	—
5% "B"	131¾	118	127½	—
"C"	97	73	98	—
MERSEY				
Ord.	15¼	7	12	—
4% Perp. Deb. ...	93½	82½	94½	—
3% Perp. Deb. ...	66½	61½	70½	—
3% Perp. Prefce....	54	44½	52½	—

CONTRACTS AND TENDERS

Locomotive Orders

Nasmyth Wilson & Co. Ltd. has received an order for two 4-8-2 locomotives and double-bogie tenders to be supplied to the inspection of the Crown Agents for the Colonies for service on the 3 ft. 6 in. gauge lines of the Gold Coast Government Railway.

W. G. Bagnall Limited has received an order from the Eastern Bengal Railway for two small narrow-gauge tank locomotives.

The Great Western Railway has placed the following orders :—

Vickers-Armstrongs Limited : supply and erection of two three-ton and six two-ton level-luffing jib cranes and a pair of dock gates for Barry docks.

F. Holcombe & Sons Ltd. : construction of new station at Briton Ferry.

Walker Bros. Ltd. : supply and erection of goods shed at Briton Ferry.

W. Wadsworth & Sons Ltd. : supply and erection of 1-ton electric lift at Greenford.

Holliday & Greenwood Ltd. : new luncheon and bedrooms and improvements to the accommodation at the Great Western Railway Hotel, Paddington.

Tersons Limited : improved mess-room accommodation at South Lambeth.

Webster & Bennet Limited : boring and turning mill for Swindon works.

Burton Griffiths & Co. Ltd. : two bar turning and screwing machines for Swindon works.

The Glasgow Railway Engineering Co. Ltd. has received orders from the Bhavnagar State Railway Administration, to the inspection of Messrs. Robt. White & Partners for 20 pairs of metre-gauge rolled steel disc wheels and axles and 78 pairs of 2 ft. 6 in. gauge spoked-centre wheels and axles required for carriage and wagon stock.

The Bombay, Baroda & Central India Railway Administration has placed the following orders to the inspection of Messrs. Rendel, Palmer & Tritton :—

British Isothermos Co. Ltd. : 80 Isothermos axle-boxes for metre-gauge coaches.

Vacuum Brake Co. Ltd. : Vacuum brake and intercommunicating fittings for 31 coaches and 100 covered goods wagons.

Tempered Spring Co. Ltd. : Approx. 500 draw and buffing springs.

The Hewittic Electric Co. Ltd. has received through its agent, the Alliance Electrical Co. Ltd., an order for seven two-bulb 600 kW 1,500-volt mercury arc rectifiers of the glass bulb type for installation in the five substations of the Tawa Flats to Paekakariki line of the New Zealand Government Railways, which is in course of electrification. The equipment will be controlled by supervisory apparatus supplied by A. Reyrolle & Co. Ltd.

The Madras & Southern Mahratta Railway Administration has placed orders for feed-water heating equipment for the 21 broad-gauge locomotive boilers which, as recorded in this column last week, are to be supplied by the Vulcan Foundry Co. Ltd. These orders are divided as follow : Caprotti Valve Gears Limited : 11 sets of Heinl feed-water heaters ; and A.C.F.I. Limited : 10 sets of A.C.F.I. feed-water heaters, all to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

The Gloucester Railway Carriage & Wagon Co. Ltd. has received an order for 11 bogie open wagons complete with disc wheels and axles and vacuum and rack brake equipment for the Nilgiri mountain section, South Indian Railway, to the inspection of Messrs. Robt. White & Partners.

Garratt Locomotives for S. Africa

Beyer, Peacock & Co. Ltd. has received an order from the South African Railways & Harbours Administration for four NG/G 13th class Garratt articulated 2-6-2 + 2-6-2 locomotives for the 2-ft. gauge. These engines, which will have a tractive effort of 18,850 lb. at 85 per cent. boiler pressure, wil be manufactured under Beyer, Peacock & Company's supervision at the works of the Société Anonyme John Cockerill, of Liége, Belgium.

Guest Keen & Nettlefolds Limited and the Rivet Bolt & Nut Co. Ltd., have each received rate contracts for the Indian Stores Department for rivets for the period August 7, 1935, to August 6, 1936.

Locomotive Boiler Orders

Kitson & Co. Ltd. has received an order for six boilers for HG/S class locomotives for the Iraq Government Railways.

The Eastern Bengal Railway Administration has placed orders for locomotive boilers as follow : Royal Hungarian State Iron Steel & Machine Works : 10 boilers ; Vulcan Foundry Co. Ltd. : 15 boilers ; and Fried. Krupp A.G., 15 boilers.

Nasmyth Wilson & Co. Ltd. has received orders from the Madras & Southern Mahratta Railway for seven boilers for metre gauge locomotives divided as follow : four for MS 4-6-0 locomotives ; one for YC 4-6-2 heavy locomotive and two for YD 2-8-2 light locomotives.

The North British Locomotive Co. Ltd. has received orders for two boilers for 2-6-0 type locomotives, Canton-Hankow Railway ; one boiler for 301-312 class and one boiler for 260-264 class locomotives, Peiping-Hankow Railway ; and five sets of conversion parts comprising boilers, cylinders, &c., required for M class locomotives, Nizam's State Railway.

The Egyptian State Railways Administration has placed the following orders :—

Fredk. A. Perry, on behalf of Rheinisches Kleineisenwerk A.G. : Side bearing springs (E.S.R. 21.339, total price £517 10s. f.o.b. Rotterdam.)

Ericsson Telephones Limited : Switchboard cable (E.S.R. 30.137, total price £219 5s., f.o.b. Stockholm).

N.V. Nederlandsche Kabelfabriek : Copper wire (E.S.R. 30.166, total price £389 7s. 6d., f.o.b. Rotterdam).

The Phosphor Bronze Co. Ltd. : Metallic packing (Order No. 21.321, total price £549 2s. 9d., f.o.b. London).

Coltness Iron Co. Ltd. : Wheel centres (E.S.R. 21.337, total price £298 8s., f.o.b. Glasgow).

Socony Vacuum Oil Company : Oil for internal combustion engines (E.S.R. 359 G.3/1-9, price L.E. 15,750 mills. per metric ton, free delivery, Gabbary).

Clonterie et Trefilerie des Flandres : Bolts and nuts (Order No. 3.181, total price £204 3s. 4d., f.o.b. Antwerp).

The Associated Equipment Co. Ltd. has received orders from the London Midland & Scottish Railway for two oil-engined Matador goods vehicles ; from the L.P.T.B. (Country Services) for four oil-engined Regents ; and for Hants & Dorset Motor Services Limited, for one Regent passenger vehicle.

John Baker & Bessemer Limited has received an order from the Madras & Southern Mahratta Railway Administration for 18 locomotive straight axles.

Leyland Motors Limited has received orders for Titan passenger vehicles from railway-associated road operators as follow :—Southdown Motor Services Limited, 24 ; Yorkshire Woollen District Transport Co. Ltd., 33 oil-engined ; and East Kent Road Car Co. Ltd., 10.

Railcar Orders

Leyland Motors Limited has received an order for the supply of two complete diesel engine and transmission units for two railcars which the Birmingham Railway Carriage & Wagon Co., Ltd. has in hand for the Buenos Ayres & Pacific Railway. These units consist of 10-litre oil-engines, torque converters, transmission, controls and radiators.

Leyland Motors Limited has also received orders from the Mogyana Railway for four complete railcar units consisting of eight-litre heavy oil engines, hydraulic torque converters, controls and axle gearing. Each unit also includes a mechanical reverse operated by a change-over switch on the control board.

The Kampsax Consortium is calling for tenders, to be presented in Tehran by August 18, for the supply of rails, fish plates, bolts and nuts. Firms desirous of offering material of United Kingdom manufacture can obtain further details from the Department of Overseas Trade. The Kampsax Consortium was referred to in the article upon the Trans-Indian Railway in our issue of July 26, as controlling the whole of the construction work on that line, on behalf and under the supervision of the Iranian Railway Ministry.

To assist in providing work for the Saar industries the German State Railway Company has recently passed an order to the Luttgen Wagon Manufacturing Company, Saarbrucken, for 40 wagons valued at about 300,000 R.M., according to Reuters.

NEW R.A.S. CONTINENTAL SERVICE.—Railway Air Services Limited inaugurated last Sunday a new Sundays only service between Shoreham airport and Le Touquet. The service, which is the first operated by R.A.S. to extend beyond the limits of Great Britain, is scheduled to continue until September 1.

LEGAL AND OFFICIAL NOTICES

1935. No. 219.

In the Court of the Railway Rates Tribunal.
Railways Act, 1921.

Modification of the Schedules of Standard Charges

NOTICE IS HEREBY GIVEN that the Amalgamated Railway Companies have filed an Application in the Court of the Railway Rates Tribunal applying for the modification of certain of the charges in the Schedules of Standard Charges settled by the Tribunal under the provisions of the Railways Act, 1921.

Copies of the said Application can be obtained from G. Cole Deacon, Secretary, Rates and Charges Committee, 35, Parliament Street, Westminster, London, S.W.1, price 1s. post free.

Any representative body of Traders or any person or any Railway Company desiring to object to the proposed modifications must file a Notice of Objection at the Office of the Registrar on or before the 23rd day of September, 1935.

Each Notice filed must be stamped with an adhesive fee stamp for 2s. 6d. (which can only be purchased at the Office of the Tribunal) and five additional copies of each Notice must be lodged with the original at the Office of the Registrar.

Dated the 30th day of July, 1935.

T. J. D. ATKINSON,
Registrar.

2, Clement's Inn,
Strand,
London, W.C.2.

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS

APPLICATIONS from qualified candidates are invited for the following post:—

LOCOMOTIVE RUNNING ASSISTANT required by the Government of the Federated Malay States for the Railway Department for four years with possible permanency. Salary $400 a month rising by annual increments of $20 a month to $600 a month. The Government rate of exchange is now 2s. 4d. to the dollar, but the purchasing power of the dollar in Malaya is at present considerably less than that of 2s. 4d. in the United Kingdom. Free passages, and, if married, for wife and children also, not exceeding four persons. Liberal leave on full salary. Candidates, age 24 to 30, must have passed the Associate Membership examination of the Institution of Mechanical Engineers or possess an equivalent qualification, and have served an apprenticeship as a mechanical engineer in a locomotive engineer's shops or railway locomotive works. Running shed experience is essential and footplate experience is an advantage.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/3788.

Transport Company in Ireland

APPLICATIONS are invited for the position of ASSISTANT to general manager of transport company in Ireland. Applicants must have railway or shipping experience. Write, stating salary expected, age and previous experience.—Box 1, c/o THE RAILWAY GAZETTE, 33, Tothill Street, London, S.W.1.

WANTED for large European firm of Engineers in India, a Senior Estimator and Designer in the Bridge and Structural Department. Applicants should be of good address and education, and possess practical workshop experience and sound knowledge of design of steel bridges and structures. Preference will be given to those holding B.Sc. (London) or equivalent degrees. Age between 25 and 30. First agreement will be for a period of five years. Applications by letter, with copies of references and details of experience, stating age and whether married or single, to "E. & D.," c/o W. Abbott Limited, 32, Eastcheap, London, E.C.3.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

A New L.M.S.R. London Suburban Station

A new station at Elm Park, on the L.M.S.R. Barking and Upminster electrification extension, was opened for public traffic on May 13 last. As recorded in our issue of May 24, it was officially inaugurated by Sir E. Hilton Young on May 18, and is one of eight new stations provided within the last three years on the London, Tilbury and Southend section. Elm Park station is in the centre of a new housing estate and is served by the through electric trains between London and Upminster.

It has an island platform 700 ft. long by 30 ft. wide, covered for a length of 400 ft.

The platform roof is of welded construction, the first of its type in this country, and is shown in the accompanying illustration. Cleats for the attachment of woodwork are of flat plate instead of the usual angle section. These and the covers to joints were shop welded to one of the abutting sections, not only to reduce the amount of site welding but also so that they could be used as landing stops to facilitate erection, and allow the use of a clip instead of holes and bolts as temporary connections. The stanchion bases are formed of two 15-in. by 4-in. channels welded to the outer edges of the 18-in. by 7-in. joist forming the columns, the tops of which carry two brackets, each cut from 16-in. by 6-in. joist to give rigid connections to the main cross members. As much as possible of the fabrication was done in the shops. The welded connection of the main cross members to the stanchion tops had to be done on the site by overhead welding, but no difficulty was experienced in making the weld seams in this position.

Island platform at Elm Park station, L.M.S.R., with welded roof, the first of its type in Great Britain

The station is a model of attractiveness, the welded roof presenting a clean appearance, and the platform buildings being pleasantly decorated and well lighted. The station building proper is built on an extension of the new road bridge over the railway and communicates with the platform by an inclined slope. The buildings are centrally heated.

INSTITUTE OF BRITISH EXECUTIVES.—The Institute of British Executives, which was formerly the British Executive Employment Society and was founded to assist unemployed men of executive status in finding appointments, has added a clubroom and library to its premises at Swan House, 133, Oxford Street, W.1. These were the gift of the London Parochial Charities Trust, and were formally opened by H.R.H. the Duke of Kent, on July 23. In the course of his speech, His Royal Highness emphasised the widening scope of the institute, which now aims at furnishing advice and assistance to men in executive posts whether employed or unemployed.

Railway Share Market

The stock and share markets are holding up reasonably well under the adverse conditions of a 21-day account, which is rendered more unpopular than is usual by the incidence of the August Bank Holiday. Home railway stocks have been unable to throw off the unfavourable impression which was made by the half-yearly statements and the indications of a larger ratio of expenses than had been counted upon by most purchasers of stocks in the last few months.

Brokerage firms which had been recommending their clients to buy home railway stocks for a long-term recovery are faced with the difficulty of replying to questions whether clients should average down the prices at which they hold stocks by making fresh purchases. The immediate outlook for L.N.E.R. issues and also Southern stocks is rendered uncertain by the terms of the interim reports of those two companies. If L.N.E.R. second preference stock were worth buying at over 30 earlier in the year and at up to 47 last year it should be more attractive now that it is down to 22, whilst in the case of Southern deferred stock the present price is about 11 points below last year's best figure. The tendency appears to be for brokerage firms to suggest that an exchange should be made out of these two stocks into L.N.E.R. first preference and Southern preferred ordinary respectively. The former stands at about 14 points below the highest of this year and on a repetition of the 1934 dividend of 3¼ per cent. gives a yield of £5 8s. 4d. per cent. at the current quotation. Southern preferred ordinary stock is confidently expected to attract renewed attention at the current price, which includes the dividend just announced. The yield on last year's 4 per cent. dividend is £4 17s. 6d. per cent. with a good prospect of an increase in the dividend to 5 per cent. during the next year or two and a resultant yield of £6 2s. per cent.

Among other stocks which are now considered to be speculatively attractive for the investor who is prepared to place confidence in the recovery of railway revenues is the L.M.S. 1923 preference stock. The foreign railway market has been weak, with Argentine railway stocks lower on the unfavourable trend of wheat market prices. Nitrate Railway shares established a rise. Canadian Pacific shares fell on the traffic receipts for June, which showed a gross increase, but a big rise in working costs.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1934-35	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1934	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1934	Prices: Lowest 1934	Prices: July 31, 1935	Yield % (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	830	28.7.35	13,400	— 3,470	30	372,570	402,220	— 29,650	Ord. Stk.	26¾	19	22	Nil
	Argentine North Eastern	753	27.7.35	7,738	— 282	4	30,762	31,076	— 314	,,	11	6⅞	6	Nil
	Argentine Transandine	111	—	—	—	—	—	—	—	A. Deb.	52	45	47½	8⅞
	Bolivar	174	June, 1935	6,000	+ 900	26	39,400	38,750	+ 650	6 p.c. Deb.	10	6½	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	13¾	10⅞	13	3¹⅞
	Buenos Ayres & Pacific	2,806	27.7.35	71,974	+ 3,547	4	289,112	282,592	+ 6,520	Ord. Stk.	16½	8½	8	Nil
	Buenos Ayres Central	190	14.7.35	$64,292	+ $4,420	2	$132,544	$122,513	+ $10,031	Mt. Deb.	23	10	16	Nil
	Buenos Ayres Gt. Southern	5,085	27.7.35	115,394	— 16,638	4	444,541	494,027	— 49,486	Ord. Stk.	35	22	21½	Nil
	Buenos Ayres Western	1,930	27.7.35	33,608	— 10,020	4	149,317	175,611	— 26,294	,,	27½	18½	17	Nil
	Central Argentine	3,700	27.7.35	121,093	— 12,337	4	488,473	518,168	— 29,695	,,	23	13½	12½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	14	7	7	Nil
	Cent. Uruguay of M. Video	273	27.7.35	8,646	— 8,170	4	34,181	66,971	— 32,790	Ord. Stk.	15½	8	4½	Nil
	Do. Eastern Extn.	311	27.7.35	1,262	— 132	4	5,655	5,572	+ 83	—	—	—	—	—
	Do. Northern Extn.	185	27.7.35	1,156	+ 275	4	4,570	3,478	+ 1,092	—	—	—	—	—
	Do. Western Extn.	211	27.7.35	712	+ 150	4	2,265	2,193	+ 72	—	—	—	—	—
	Cordoba Central	1,218	27.7.35	32,960	— 3,210	4	136,630	143,910	— 7,280	Ord. Inc.	6	3	2½	Nil
	Costa Rica	188	May, 1935	13,867	— 2,792	48	176,238	197,823	— 21,585	Stk.	30¾	23½	33§	6¹⅛
	Dorada	70	June, 1935	11,800	+ 3,000	26	66,800	60,200	+ 6,600	1 Mt. Db.	103	95	102½	5⅞
	Entre Rios	810	27.7.35	11,710	+ 860	4	45,029	40,866	+ 4,163	Ord. Stk.	21½	12	10	Nil
	Great Western of Brazil	1,082	27.7.35	5,400	— 100	30	232,500	232,000	+ 500	Ord. Sh.	⅞	⅜	½	Nil
	International of Cl. Amer.	794	May, 1935	$497,050	+ $21,927	21	$2,260,638	$2,466,672	— $206,034	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	1/-	1/-	½	Nil
	La Guaira & Caracas	22¾	June, 1935	3,915	+ 35	26	23,845	21,435	+ 2,410	Stk.	12¾	7⅝	8½	Nil
	Leopoldina	1,918	27.7.35	22,510	— 7,498	30	283,939	594,220	— 110,281	Ord. Stk.	14⅝	7	3½	Nil
	Mexican	483	21.7.35	$225,400	+ $18,600	3	$693,500	$643,600	+ $49,900	,,	3¼	1½	1	Nil
	Midland of Uruguay	319	June, 1935	5,800	— 2,399	52	109,846	111,908	— 2,062	,,	1½	½	1½	Nil
	Nitrate	401	15.7.35	8,481	+ 4,591	28	80,994	80,588	+ 406	Ord. Sh.	32⅜	51/	2½	Nil
	Paraguay Central	274	27.7.35	$1,450,000	+ $429,000	4	$6,637,000	$3,906,000	+ $2,731,000	Pr. Li. Stk.	84	67	75½	7¹⅝
	Peruvian Corporation	1,059	June, 1935	66,756	+ 11,914	52	764,032	674,250	+ 89,782	Pref.	14½	8	8	Nil
	Salvador	100	20.7.35	¢12,650	+ ¢3,580	3	¢36,288	¢31,130	+ ¢5,158	Pr. Li. Db.	75	70	65	7¹¹⅛
	San Paulo	153½	21.7.35	24,656	— 2,719	29	741,457	810,120	— 68,663	Ord. Stk.	86	67	42½	5⅞
	Taltal	164	June, 1935	2,875	+ 657	52	36,940	27,268	+ 9,672	Ord. Sh.	2⅛	1⁷⁄₁₆	1½	6¹¹⁄₁₆
	United of Havana	1,365	27.7.35	17,606	— 1,100	4	75,272	69,411	+ 5,861	Ord. Stk.	6	2	2	Nil
	Uruguay Northern	73	June, 1935	608	— 370	52	11,946	13,533	— 1,587	Deb. Stk.	6¼	3	4½	Nil
Canada.	Canadian National	23,735	21.7.35	674,728	+ 36,971	29	17,978,982	17,799,228	+ 179,754	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	78¼	51½	55½	7⅜
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	104½	97¼	100½	3¹⅝
	Canadian Pacific	17,211	21.7.35	485,600	— 16,400	29	12,764,600	12,898,600	— 134,000	Ord. Stk.	18⅝	11¹⁄₁₆	10	Nil
India.†	Assam Bengal	1,329	30.6.35	32,812	— 7,250	13	296,697	362,866	— 66,169	Ord. Stk.	88½	72	83½	3⅜
	Barsi Light	202	30.6.35	2,970	— 877	13	33,765	41,062	— 7,297	Ord. Sh.	104½	98¾	90½	6¹⅛
	Bengal & North Western	2,114	10.7.35	63,740	— 2,111	15	748,871	797,987	— 49,116	Ord. Stk.	297½	262	295½	5⅞
	Bengal Dooars & Extension	161	30.6.35	3,769	— 474	13	29,188	32,489	— 3,301	,,	125¼	124	125½	5⅝
	Bengal-Nagpur	3,268	30.6.35	173,400	+ 12,854	13	1,647,125	1,586,173	+ 60,952	,,	105½	96	102½	3⅞
	Bombay, Baroda & Cl. India	3,072	20.7.35	172,200	— 14,550	16	2,561,400	2,552,025	+ 9,375	,,	115	108½	113½	5⅝
	Madras & South'n Mahratta	3,230	30.6.35	149,775	— 9,141	13	1,431,976	1,603,832	— 171,856	,,	131	122¾	121½	7¹⅛
	Rohilkund & Kumaon	546	10.7.35	11,045	— 324	15	149,953	156,250	— 6,297	,,	263	250	288½	5⅜
	South India	2,526	30.6.35	109,107	— 8,510	13	1,050,264	1,080,835	— 30,571	,,	119	115	117½	6¹³⁄₁₆
Various.	Beira-Umtali	204	May, 1935	70,053	+ 11,181	34	520,214	399,848	+ 120,366	—	—	—	—	—
	Bilbao River & Cantabrian	15	June, 1935	1,261	— 97	26	9,905	10,459	— 554	—	—	—	—	—
	Egyptian Delta	622	10.7.35	5,885	+ 46	15	52,514	52,942	— 428	Prf. Sh.	2¹³⁄₁₆	1¾	1⅞	5⅝
	Great Southern of Spain	104	20.7.35	921	— 680	29	51,532	60,449	— 8,917	Inc. Deb.	4	3½	3½	Nil
	Kenya & Uganda	1,625	June, 1935	165,532	— 7,047	26	1,292,777	1,222,928	+ 69,849	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	50	33	41½	8⅞
	Mashonaland	913	May, 1935	125,884	+ 19,026	34	945,921	731,020	+ 214,901	1 Mg. Db.	101	91¾	103	4⅞
	Midland of W. Australia	277	May, 1935	13,048	+ 912	48	147,834	146,176	+ 1,658	Inc. Deb.	100	93	94½	5¹⅛
	Nigerian	1,905	15.6.35	20,584	— 4,349	11	284,191	296,256	— 12,065	—	—	—	—	—
	Rhodesia	1,538	May, 1935	198,403	+ 26,795	34	1,540,983	1,234,884	+ 306,099	4 p.c. Db.	104⅞	97½	104	3¹⅜
	South African	13,217	29.6.35	593,590	+ 81,679	13	6,969,945	6,297,277	+ 672,668	—	—	—	—	—
	Victorian	4,728	Apl., 1935	799,418	+ 68,999	43	7,962,662	7,716,599	+ 246,063	—	—	—	—	—
	Zafra & Huelva	112	June, 1935	9,846	— 232	26	65,245	65,801	— 556	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rate of exchange and not on the par value